DOST DOST-SEI

2010-2012

ERDT REPORT

ENGINEERING RESEARCH AND DEVELOPMENT FOR TECHNOLOGY

Ateneo de Manila · Central Luzon State University · De La Salle University Manila · University of the Philippines · Mapua Institute of Technology · Mapua Malayan Colleges Mindanao · University of San Carlos

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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ENGINEERING RESEARCH AND DEVELOPMENT FOR TECHNOLOGY

Message from the Program Leader

It is my pleasure to present the Engineering Research and Development for Technology (ERDT) Accomplishment Report for the three Program Cycles covering March 1, 2010 to December 31, 2012.

ERDT has come a long way since its inception in 2007, achieving its main objective of acquiring a critical mass of researchers, engineers, and scientists with Master's and Ph.D. Degrees. For the period of March 2010 to December 2012, ERDT has improved a lot in terms of attracting more Filipinos to continue with their advanced degrees in the field of engineering within the consortium 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.

For the past years, ERDT has also sent faculty members to universities abroad to pursue their doctoral studies. These foreign and locally trained scholars affiliated with the consortium universities and State Universities and Colleges (SUCs) will greatly help us in upgrading the quality of engineering graduate programs. With the increase in number of faculty with doctoral degrees in the consortium universities, we can institute more advanced courses and higher degree programs especially in several SUCs where graduate programs need improvement. We can also see the fruits of ERDT towards value-added research activities in the near future through this human resources improvement for research and development.

Other accomplishments of ERDT are described in detail in this report. Enjoy reading this accomplishment report and more power to ERDT!

Aura C. Matias, Ph.D.
ERDT Program Leader
Dean, College of Engineering
University of the Philippines Diliman

Message from the Program Leader

Seven years ago, seven Deans got together to establish the Engineering Research and Development for Technology (ERDT). The level of cooperation at that time has been carried forth and we now see the initial results of our efforts. The graduates of ERDT may be found in private industries, the academe, government agencies and start-up companies. It would take thirteen more years for ERDT to realize its goal of a critical mass of researchers, scientists and engineers for a globally competitive Philippines. We are one-third of the way now and a review of the program should be considered to ensure that critical elements of the ERDT Program are in place to ensure its sustainability.

Given the upcoming transformation of the ASEAN into a single economic market and production base in 2015, there is urgency in harnessing the talent pool of Filipino engineers and focusing them on high value added activities. The ERDT, along with its counterpart program for the Sciences, the Advanced Science and Technology Human Resource Development Program (ASTHRDP), form the foundation for our country's substantial participation in the ASEAN Economic Community.

I look forward to the promise of a strong Philippine economy that supports inclusive growth, backed by a solid engineering base of human resource, and made resilient by ERDT graduates.

Rowena Cristina L. Guevara, Ph.D.
Executive Director, DOST-PCIEERD
ERDT Program Leader (2007-2010)
Professor, UP EEEI

The ERDT

The ERDT is a consortium of eight-member universities in the Philippines that offers 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, the ERDT Program was conceptualized and initiated by former Dean Dr. Rowena Cristina L. Guevara of U.P. Diliman College of Engineering (COE), 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.

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 scholarships to potential and qualified applicants who are interested to pursue engineering graduate program. Aside from the 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 and 4) Semiconductor and Electronics Track. This 2012, the 5) Manufacturing and Machinery Track was launched 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 in 2013.

In addition to the three components of the program, ERDT also embarked in organizing workshops, conferences, congress and summits. On September 12, 2008, the 1st ERDT conference was held with the theme "Setting the Backdrop for the ERDT R&D in the next 10 years". The 2nd ERDT conference held in 2009 focused on the importance of high level engineering research and development in addressing national issues including economic growth, and followed by the 3rd ERDT conference in "multi-disciplinary approach in solving Philippine problems". In February 2010, ERDT started in crafting the R&D roadmap in the 4th ERDT conference after roundtable discussions with the industry, government agencies and academic institutions. In its 5th ERDT conference in 2010, ERDT gathered four representatives from the national departments of the government which are the Science and Technology (DOST), Public Works and Highways (DPWH), Energy (DOE) and Environment and Natural Resources (DENR). The 6th ERDT conference in 2011 addressed the grand challenges through engineering innovation. The 7th ERDT conference also in 2011 discussed the importance of carbon-neutral economy focusing the issues on the environment and climate change. In 2012, the first ERDT congress was launched with the theme "The Inventive Engineer: Patents and Commercialization" with the scholars motivated by the talks of the distinguished plenary speakers. Also in 2012, ERDT is in partnership with IEEE Philippines to hold the prestigious IEEE TENCON 2012 co-located with the 8th ERDT conference where around 50 ERDT scholars participated by presenting their ongoing researches. ERDT has started to bridge the gap between the industry and the academe with the 2012 R&D Summit after a series of focus group discussions and round table discussions with government agencies, academe and industry.

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.

In summer of 2008, ERDT started the emphasis on technology entrepreneurship. This was brought about by the realization that for researches to be relevant, it must be translated to usable products or processes. To prepare the scholars for possible technoentrepreneurship, ERDT started offering ERDT scholars technoentrepreneurship class every summer since 2008.

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.

FIFTEEN YEAR PLAN[1]

The need to develop our technology-based research capability through engineering graduate research training has never been more urgent. We need engineers with advanced degrees to make S&T work for Filipinos: from disaster mitigation to poverty alleviation, from agriculture to semiconductor industries; ensure a sustainable environment and affordable energy for the future; and produce indigenous technologies to better our lives. This is the essence of the ERDT Program.

The effect of globalization has exposed our vulnerability to foreign technology dependence and the lack of technological research in the country. While we continue to produce engineers who are trained to use foreign-developed technologies, our Asian neighbors have turned their focus on producing graduate research engineers who are trained to develop and create such technologies. This is a realization that graduate level research can usher in high-value engineering and economic development. South Korea and Taiwan have recognized this 40 years ago. Both countries are now leading technological centers and economic powers in the world.

Vietnam has recently embarked on a massive man-power development.[2] Over the last nine-years, from 2000-2009, Vietnam has sent more than 2,100 Ph.D. candidates and 1,600 masters abroad. The government of Vietnam plans to send a total of 10,000 Ph.D. candidates trained overseas. It is not surprising then that Vietnam produces more graduate research engineers than the Philippines. In fact, most of our ASEAN neighbors such as Thailand, Malaysia, and Singapore, far outpace us in the number of research engineers.

The need to develop our technology-based research capability through engineering graduate research training has never been more urgent. We need engineers with advanced degrees to make S&T work for Filipinos: from disaster mitigation to poverty alleviation, from agriculture to semiconductor industries; ensure a sustainable environment and affordable energy for the future; and produce indigenous technologies to better our lives. The continued implementation of the Engineering Research and Development for Technology (ERDT) will address the lack of highly trained research scientists and engineers (RSEs) and R&D activities in engineering in the country. The ERDT, through the consortium of 8 universities, with mature graduate programs in engineering, should be able to generate within reasonable time a sizeable chunk of the necessary number of RSEs and engineering R&D required for national development and provide the human infrastructure supportive of local R&D.

The Consortium is needed to bootstrap the various engineering programs in the graduate level. The specializations in each university will be developed in accordance with the identified needs of technology-based industries. These universities have strong ties with industry, ensuring synergy between academe and industry.

1 Lifted (exact words) from the ERDT 15-year plan

2 http://www.nesovietnam.com/home/news-events/news-archive/2010/vietnam-plans-to-send-1-000-phd-followers-abroad

YEAR	MS	PhD
2010	208	44
2011	233	49
2012	261	55
2013	292	62
2014	327	69
2015	367	78
2016	411	87
2017	460	97
2018	515	109
2019	577	122
2020	646	137
2021	724	153
2022	810	171
2023	908	192
2024	1017	215
2025	1139	241
TOTAL	**8895**	**1881**

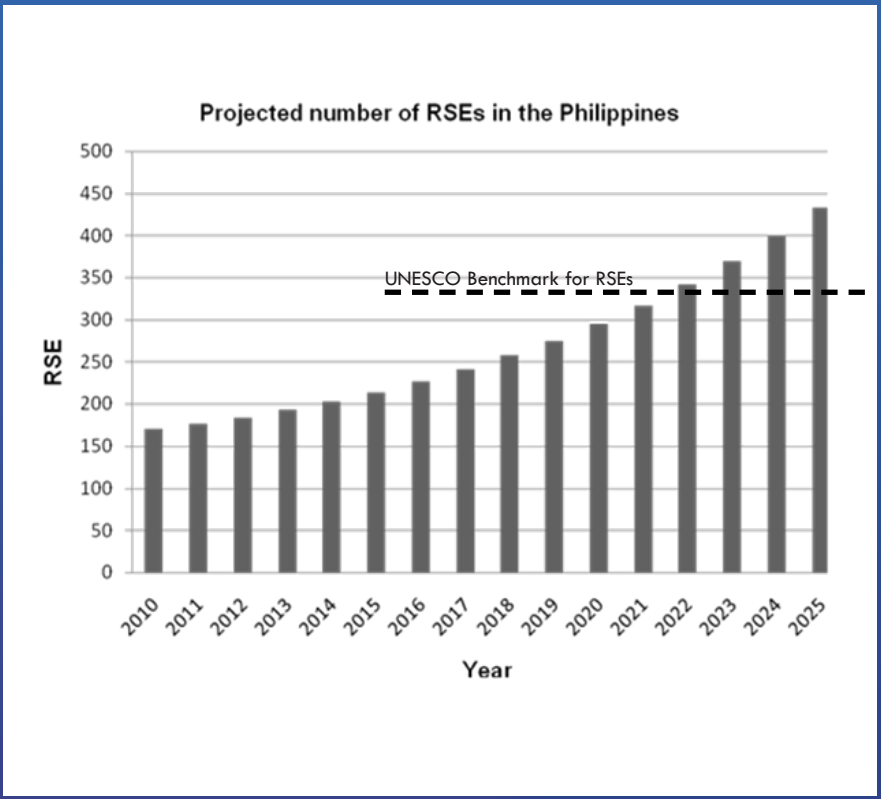

Table 1: Planned yearly intake of M.S. and Ph.D. scholars in ERDT up to 2025

Based on the absorption capacity of the Consortium, the viability for us to reach the UNESCO benchmark of RSEs will be realized by a human resource development plan that offers generous scholarships for engineers. With the intended yearly intake of ERDT scholars as shown in Table 1, and with the assumption that ERDT will contribute a quarter of the research manpower for the country, the Philippines would be able to reach the UNESCO benchmark on the 12th year of the Program. This is graphically illustrated in the Chart below. If the potential for multiplier effect of each research graduate in the academe is factored in, it is possible that the UNESCO benchmark can be achieved in a shorter period of time.

The plan to accept new members of the ERDT Consortium to Engineering Schools who are able to attain the minimum requirements for ERDT accreditation will further accelerate the period by which we can attain the UNESCO benchmark.

The investment needed for engineering graduate scholarships over the next 15 years is PhP 16 Billion. These include local graduate scholarship, faculty development and the sandwich program.

Accomplishment Report 2010-2012

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 in its seventh year of implementation, ERDT is continuously and constantly fulfilling its goals through its various components.

This Accomplishment Report 2010-2012 is for period in the Program Cycles:

- Program Cycle 3: March 1, 2010 to February, 28, 2011 and extended to May 31, 2011 with combined total allocation of PhP 340,039,787.81
- Program Cycle 4: June 1, 2011 to May 31, 2012 with a total allocation of PhP 303,262,809.74
- Program Cycle 5: January 1, 2012 to December 31, 2012 with a total allocation of PhP 310,400,000

The extension in Program Cycle 3 is done to align with the Academic Calendar Year of most members of the consortium universities. The shift in the start of Program Cycle 5 (thereby overlapping with Program Cycle 4) is done to align with the Calendar Year of DOST (for budgetary purposes).

This report also revisits the ERDT Program accomplishments of each component since the Program began. Comprehensive data for the three Program Cycles and, for some parts, from the start of the ERDT program are provided in the appendix. The statuses of R&D and Infrastructure development are also enclosed in this report.

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 scholarship component of the ERDT 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 2 shows the graduate (MS and PhD) degree programs offered by the members of the consortium universities supported by the ERDT-HRD Program.

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				+		+		
Remote Sensing/ Geo Informatics				+		+		
Water Resources						+		

Table 2: Master's and Doctoral Programs offered by ERDT Consortium Universities

New UP Diliman ERDT scholars entering June 2011 listen to the orientation given by Dr. Berana at P&G Room, Melchor Hall, UP Diliman on May 27, 2011.

The target numbers vis-à-vis the actual intake of scholars in each Academic Year for each Consortium University member from 2010-2012 is shown in Table 3. Overall, the number of successful applicants who were awarded scholarships as compared to the target is relatively good with hit rates ranging from 76-102% for MS and 50-81% for PhD. Due to the increasing trend of the actual admitted scholars for the first three years of the program, the number of allotted slots has been increased. The hit rate, which peaked at 2009 – 2010, decreased in 2010-2011, and slowly regains in 2011-2012. That gave the signal that the targets for 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.

As a regular promotional activity of the ERDT Program, roadshows were done to attract potential scholars to the program. Despite these roadshows and other promotional activities, targets for the intake of scholars were not fully reached. This is because fresh engineering graduates were attracted more to immediately take the board exam and work in the industry rather than pursue a graduate degree. There is a need to strengthen the strategies in promoting the ERDT Scholarship Program. In Program Cycle 6 (covering the period January 1 to December 2013), ERDT is geared for an exciting array of promotional activities such as improved and more intensive roadshows as a result of strategic planning, launching of ERDT website and scholarship database, ERDT Week, 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.

MS

	2010-2011			2011-2012			2012-2013		
	Actual	Target	Hit Rate(%)	Actual	Target	Hit Rate (%)	Actual	Target	Hit Rate (%)
UPD	85	86	99	66	99	67	88	111	79
ADMU	20	15	133	16	17	94	11	19	58
CLSU	13	10	130	8	12	67	29	13	223
DLSU	34	25	136	32	29	110	38	32	119
MIT	23	25	92	20	24	83	33	27	122
MSU-IIT	15	15	100	21	17	124	16	19	84
USC	10	20	50	11	23	48	2	26	8
UPLB	13	12	108	3	12	25	11	13	85
TOTAL	**213**	**208**	**102**	**177**	**233**	**76**	**228**	**260**	**88**

PhD

	2010-2011			2011-2012			2012-2013		
	Actual	Target	Hit Rate(%)	Actual	Target	Hit Rate (%)	Actual	Target	Hit Rate (%)
UPD	13	20	65	6	23	26	17	26	65
ADMU	2	4	50	1	5	20	1	5	20
CLSU	2	3	67	3	4	75	1	4	25
DLSU	2	4	50	5	5	100	8	5	160
MIT	3	3	100	10	4	250	5	4	125
MSU-IIT	3	3	100	3	2	150	4	3	133
USC	0	3	0	0	2	0	0	2	0
UPLB	3	4	75	0	5	0	3	6	50
TOTAL	**28**	**44**	**64**	**28**	**50**	**56**	**39**	**55**	**71**

Table 3: Target numbers and actual numbers of scholars for the Program Cycles 3, 4 and 5 {As of December 31, 2012}

The actual numbers of scholars in each Consortium member from 2009 – 2012 are given in Table 4. As of December 31, 2012, there are a total of 228 MS and 39 PhD scholars currently under the ERDT program. These numbers exclude those who are 'on extension' and 'for monitoring' status. There were delays in the graduation, as evidence by the high number of scholars who are 'on extension' and 'for monitoring status' (not shown in Table 4), due to the difficulty in conducting the research for the thesis or dissertation. This is mainly because of the 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. In some cases, a mismatch in the research interests of the scholar and the adviser was observed. 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.

It is expected that within the next Program Cycle (AY 2013 – 2014), most scholars who were admitted in the first three years of the ERDT program and who got delayed in their studies will graduate. These graduates are expected to give return service to the Philippines and will be strongly encouraged to commercialize on their researches and apply for patent if applicable. With the launching of the scholarship database, the career progress of the ERDT graduates can also be tracked, networks among the alumni can be established, hopefully leading to the creation of an ERDT Alumni Association.

The distribution of ERDT graduates from 2010-2012 is shown in Table 5. As of December 31, 2012, the total number of ERDT scholars who already graduated is 204 for MS and 21 for PhD graduates in the program. These numbers are low as compared to the number of scholars that were expected to graduate since the Program began. The reasons on the delay in the graduation are already mentioned above. However, to further increase the number of graduates, the ERDT program expanded the Sandwich Program particularly in priority specialization areas.

	2010-2011		2011-2012		2012-2013	
	MS	PhD	MS	PhD	MS	PhD
UPD	85	13	66	6	88	17
ADMU	20	2	16	1	11	1
CLSU	13	2	8	3	29	1
DLSU	34	2	32	5	38	8
MIT	23	3	20	10	33	5
MSU-IIT	15	3	21	3	16	4
USC	10	0	11	0	2	0
UPLB	13	3	3	0	11	3
TOTAL	**213**	**28**	**177**	**28**	**228**	**39**

Table 4: ERDT scholars by Consortium Universities per year

	2010-2011		2011-2012		2012-2013	
	MS	PhD	MS	PhD	MS	PhD
UPD	16	3	36	6	24	9
ADMU	10	0	5	0	11	0
CLSU	4	0	5	0	3	2
DLSU	8	0	14	0	15	1
MIT	5	0	5	0	2	0
MSU-IIT	4	0	4	0	4	0
USC	6	0	10	0	2	0
UPLB	2	0	6	0	3	0
TOTAL	55	3	85	6	64	12

Table 5: Distribution of number of graduates per Consortium member as of December 31, 2012 (end of Program Cycle 5)

The ERDT scholars (graduates) are now working in various sectors. Two of the notable graduates who ventured into being an entrepreneur are Deogracias P. Villame (founder: Itemhound Corp; MS in Electrical Engineering, UP Diliman 2008), Roland Jay Miguel (founder: GSMetrix; MS in Electrical Engineering, UP Diliman 2008). This 2013, DOST has committed to hire ERDT graduates to work on research projects and to place them in research and development institutions (RDI's) of DOST. The names of all ERDT graduates and the titles of their theses/ dissertations are shown in Appendix A.

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.

Table 6 shows the yearly distribution of slots and the actual number of scholars who availed the program. Since the ERDT program started, there are already 19 scholars who were given opportunities to conduct their research abroad, and 14 scholars already returned. Among those who returned, 10 scholars already graduated, 4 scholars who recently came back from abroad are in their final dissertation stage, and 5 scholars are still abroad conducting their research. The list of these 19 scholars are listed in the Appendix B. The number of applicants for the program increased in 2010 because of the increase in number of senior or graduating PhD students who need to find available facilities for their specialized researches and dissertations. To further increase the number of PhD graduates, ERDT has increased the number of slots to 18 scholars with budget of PhP 22,000,000 and is now open to other members of the Consortium in this Program Cycle 5 (January 1, 2013-December 31, 2013).

Year	Slots	Actual Intake	Status of the scholar
2008	7	1	Graduated
2009	10	3	Graduated
2010	12	3	Graduated
2011	8	7	3 Graduated, 4 Returned
2012	8	5	On-going

Table 6: Distribution of PhD Sandwich Program per year since the start of the ERDT Program

FACULTY DEVELOPMENT

FOREIGN PhD SCHOLARSHIPS

To improve the faculty roster of the U.P. Diliman COE, 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 31 faculty members who were given scholarships to study abroad.

The list of all accepted faculty members for ERDT PhD fellowship abroad for faculty development is shown in Appendix C. There are already 8 faculty members who graduated and returned to UP Diliman, one (1) faculty already returned but expected to graduate on 2013, and 23 faculty members are still on-going with their fellowships. It is expected that seven (7) of the ongoing scholars will graduate in 2013 and return to their respective departments/institutes. Unfortunately, two faculty members (Shiela Mae C. Ang of the Department of Chemical Engineering and Ronald John S. Galiza of Institute of Civil Engineering) did not render service after they graduated (but agreed to pay the cost of the scholarship they enjoyed).

After their return, the faculty scholars have been very active in their respective departments doing advising ERDT scholars in MS and PhD, administering research laboratories, submitted project proposals for research funding and even continued to publish in scientific journals and participated in international conferences. Their training and experience outside the Philippines has 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 2013 (Program Cycle 6), there are six 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 6 is more than P50 Million (PhP 53,190,020.96). Table 7 shows the targeted number of PhD scholars in the next three years (2013-2015). ERDT hopes to continue with the improvement of faculty alongside with the ongoing infrastructure development and research capacity building efforts. Faculty members who are recipients of the ERDT Faculty Development Program abroad are listed in the Appendix C.

Year	Awarded	Graduated/ Expected	On Going (at the end of the year)
2007-2012	31	9	22
2013	+8	7	23
2014	+8	2	29
2015	+10	5	34

Table 7: Target distribution of awarded Foreign PhD Scholarship per year

"The ERDT scholarship gave me the opportunity to be enrolled in the best industrial statistics program in the world."

Michelle V. Mancenido
PhD Student, University of Arizona
Assistant Professor, Department of Industrial Engineering and Operations Research, U.P. Diliman
ERDT Scholar

"ERDT made the world a lot smaller, more accessible."

Louis Angelo M. Danao
PhD in Mechanical Engineering, The University of Sheffield; UK
Assistant Professor, Department of Mechanical Engineering, U.P. Diliman
ERDT Scholar

"ERDT gave me the opportunity to work with world class advisers and provided me with the ability to write ISI level journal articles, and book chapters."

Rex Jalao
PhD Student, University of Arizona
AssistantProfessor, Department of Industrial Engineering and Operations Research, U.P. Diliman
ERDT Scholar

POST-DOCTORAL PROGRAM

The Post-Doctoral Grant under the ERDT Program is offered to faculty members of the Consortium who have doctoral degrees. The Grant allows the retooling and training of faculty members to ensure that researches conducted and proposed under the ERDT Program are up-to-date and relevant. Their research covers a wide range of relevant topics from robotics, disaster risk management, language, soil and earthquake engineering, to nanomaterials and polymers engineering under the supervision of internationally renowned professors in reputable academic institutions. Returning faculty members from post-doctoral studies will be able to transfer knowledge and technology and help in establishing laboratories for local scholars. They are also expected to mentor their junior faculty members in teaching and doing researches.

Most of previously awarded post-doctoral fellows have already returned to their teaching posts. Currently, two faculty members are now in universities in Italy doing research in environmental modeling and latest research on water quality. In 2013, there are three slots offered by ERDT for post-doctoral fellowship and could increase in the succeeding years. The list of all post-doctoral fellows from the start of ERDT program is shown in Appendix D.

" My two months of post doctoral fellowship at the Global Earthquake Model headquarters at the University of Pavia allowed me to interact directly with the global network of specialists and experts on earthquake risk management. It also allowed me to study the possibility of analogous approach to flood risk management"

Benito M. Pacheco
Post-doctoral Fellow, University of Pavia, Italy
Professor, Institute of Civil Engineering U.P. Diliman

"It's great to have an opportunity to be a full-time researcher once again and collaborate with international experts in my field. During my short stay in Japan, I was able to write a full paper for an international conference. Thanks ERDT!"

Eric Augustus J. Tingatinga
Post-doctoral Fellow, Saitama University, Japan
Assistant Professor, Institute of Civil Engineering U.P. Diliman

"ERDT has given me opportunities to meet experts in the field of geoenvironment, to establish good collaborations with the brightest people in soils, and to write highly cited scientific paper, which made me somehow internationally recognized."

Augustus C. Resurreccion
Post-doctoral Fellow, Aalborg University, Denmark
Associate Professor, Institute of Civil Engineering U.P. Diliman

"It is nice to be back in the laboratory and experience once again how to be an overseas researcher."

Marilou P. Dalida
Post-doctoral Fellow, University of Houston, USA
Associate Professor, Department of Chemical Engineering U.P. Diliman

VISITING PROFESSORS AND VISITING 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.

Similar to the Visiting Professor Program, another component of the ERDT – HRD is the Visiting Researcher program where researchers from reputable laboratories and research institutions are invited for a short or long term to be part of the laboratory in a member consortium university. There are fewer visiting researchers than professors because, similar to cases of visiting professors, most prospective visiting researchers could not also stay for a long time in the program.

To date, there are 55 professors and 3 researchers invited.The list of visiting professors and visiting researchers is shown in Appendix E and Appendix F.

FACULTY RESEARCH DISSEMINATION GRANT

Faculty Research Dissemination Grant 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 an 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. This was initially given to faculty members of U.P. Diliman but later on the other Consortium University members also receive this grant. To date, a total of 133 research dissemination grants were awarded. (see Appendix G)







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, (a) Environment and Infrastructure, (b) Energy (c) Information and Communications Technology, (d) Semiconductor and Electronics and (e) 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 Technolgies 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. Table 8 provides a schematic of the research focus of the areas mentioned.

BIOFUELS	RENEWABLE ENERGY SYSTEMS	WASTE-TO-ENERGY SYSTEMS
•Integrated Development Program for Biofuel Feedstock Production	•Wind Energy Systems	
•Biofuel Production Technologies	•Solar PV Systems	•Pilot scale methane dry re-forming process
•Bioethanol Development Program	•Hybrid Systems •Pico-Hydro Energy Systems	

Table 8: Research Areas under the Energy R&D Track

The Information and Communication Technology R&D Track has broad areas of research with applications to Education, Health, and Resource Management and Logistics. Table 9 shows the focus areas in ICT.

EDUCATION	HEALTH	RESOURCE MANAGEMENT AND LOGISTICS
• Thin Clients	• Medical and Health Informatics	• Inventory and Tracking Systems
• Low-cost Connectivity	• Systems Biology Modeling	• Business Intelligence Software
• e-learning and Usability Design		
• Smart Classrooms		

Table 9: Research Areas under the ICT R&D Track

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.

INFRASTRUCTURE DEVELOPMENT

The third pillar of the ERDT program is infrastructure development. This will house state of the art laboratory equipment in support of the R&D thrust of the ERDT Program.

The ERDT Infrastructure Program includes the construction of six new buildings and the renovation of the existing facilities in the College of Engineering at Melchor Hall. These include the following:

New Buildings

1. Metallurgical, Mining and Materials Engineering Department (MMME) Buildings.
2. Industrial and Mechanical Engineering Department Building (IE-ME)
3. Institute of Civil Engineering (ICE) Academic and Laboratory Buildings
4. Electrical and Electronics Engineering Institute (EEEI) Building.
5. Chemical Engineering (ChE) Building
6. Energy and Environmental Engineering Programs

Renovation Works in Melchor Hall

1. Geodetic Engineering Department at the east wing of Melchor Hall
2. Engineering Science Department and classrooms at the 5th Floor of Melchor Hall

	Preparation of Design	Procure Design	Design Period	Procure Construction	Procure Construction	Construction Start	Construction Finish	Furnishing and Moving	Occupancy
A. New Buildings									
1. MMME Bldg	X	X	X	X	X	X	X	X	X
2. EEE Bldg	X	X	X	X	X	X	96%		
3. CE Bldgs	X	X	X	X	X	X	70%		
4. IE – ME Bldg	X	X	X	-	X	X	X	X	
5. ChE Bldg	X	X	X	X	X	X	70%		
6. Energy & Envi Bldg	X	X	X	X	X	X	76%		
B. Renovation									
1. ES&GE Department	X	X	X	-	X	X	X	X	X

Table 10: The status of infrastructure projects as of July 2013

Figures showing the architectural perspectives and photos of the different infrastructure projects of ERDT.

Mining, Metallurgical and Materials Engineering Building

Electrical and Electronics Engineering Power Laboratory Building

Energy and Environmental Engineering Building

Institute of Civil Engineering Building

Industrial Engineering – Mechanical Engineering Building

Chemical Engineering Building

ERDT MAJOR EVENTS AND ACTIVITIES

ERDT CONFERENCES, CONGRESS AND SUMMIT

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

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

This 2013, ERDT will hold the following activities:

- 2nd ERDT Congress at PICC (June 14, 2013) with theme "K2M: Knowledge to Market (Engineering to Enterprise)
- 9th ERDT Conference jointly Asia Pacific Industrial Engineering and Management System in Cebu City (December 4-6, 2013)

1st ERDT Conference

Engineering Hosts Research Confab[3]

The College heads consortium to map out the country's engineering research and development agenda.

Two heads are better than one. Or in this case, seven.

In an act of cooperation on a scale rarely seen, seven of the country's most technologically inclined universities have banded together with the government and taken the first steps to try and stave off the country's brain drain, particularly in the critical field of Engineering.

Seven leading universities from all over the country met with industry leaders and innovators in the first ever Engineering Research and Development for Technology Consortium (ERDT) Conference, held September 12 at the Renaissance Hotel in Makati City.

The seven member universities are 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 San Carlos and main proponent UP Diliman.

Setting the stage. According to UP College of Engineering (CoE) dean Dr. Rowena Cristina Guevara, the main purpose of this first conference, entitled Setting the Backdrop for the ERDT R&D in the Next 10 Years-Challenges and Opportunities, is pretty simple: to hear firsthand, from industry and government, what type of research the country needs. This will set the tone and direction for the research of the consortium for the next 10 years and will serve as a venue for the research that will be generated by the members. The gathering was actually a continuation of the earlier roundtable discussions begun in August 2006 when the consortium was still in its infancy.

The conference gathered the up-and-coming names in industry and government, including firms that, in some cases, are the only ones of their kind that exist in the country. Two such firms are BVN Ventures under the helm of CoE alum Francisco Sandejas and Integrated Microelectronics.

Integrated Microelectronics is the only company in the Philippines that does design and manufacturing. In his presentation, President and CEO Arthur Tan highlighted the top research priorities in the areas of manufacturing processes, energy and the environment, materials and reliability, and design.

He noted how the Philippine electronics industry has been steadily growing in the last decade, with research and development being outsourced.

"We have an edge in industry areas that are less cost-sensitive, where quality requirements and IP sensitivity are high."

Even the medical and health professions were represented as Dr. Ramón Gustilo, Chairman and CEO of Orthopedic International, Inc. and Dr.Genandrialine Peralta of the World Health Organization spoke about the need to explore the areas of waste treatment and prosthetics.

Government officials were represented by the Department of Science and Technology (DOST)'s Undersecretary for S&T Services, Fortunatodela Peña as well as Cong. Joseph Emilio Abaya, who talked about the importance of long-term government commitment and

[3] http://www.upd.edu.ph/~updinfo/octnovdec08/articles/confab.html

Hopeful. The future is bright for scholars of the Engineering Research and Development for Technology Consortium, which successfully pulled off its first conference on September 12. The conference is the first of several that aims to strengthen the technological competence of the country.

how they are already making headway through the Technology Transfer Act.

Lofty ideals. The ERDT is a 10-year program that seeks to advance the technological competitiveness of the country by focusing on innovation-high, value-added activities and relevant technologies.

What began as an idea in August 2006 among members of the Commission on Science and Technology Education (COMSTE) has now become a full-blown endeavor, involving some of country's best minds coupled by the financial and bureaucratic muscle of the DOST and the active participation of the private sector.

Some 150 scholars are involved in the consortium, which focuses on post-graduate education in various fields under the DOST. It consists of three components distributed among four research tracks: Energy, Environment and Infrastructure, Information and Communications Technology and Semiconductor and Electronics.

The scale of the project is virtually unprecedented, involving seven universities from all over the country. And with the equipment, infrastructure and scholarship adding up to some P3.5 billion, it is also the biggest human resource development investment ever made by the government.

The consortium hopes when the project is over, they would have produced enough MS (596) and Ph.D. (112) engineering graduates in the right research areas as to jumpstart a chain reaction that would eventually put the country on a par with other emerging economies in the region.

Brick by brick. And just how far behind are we? Recent surveys put the Philippines among the countries with the lowest ranking in terms of research output. A figure that Guevara says is dismal compared to some of our Asian neighbors.

According to Guevara, back in 2005, when UP produced one MS graduate, counterpart universities in Vietnam produced six, Thailand 25 and Singapore 200.

And while this is not necessarily the deciding factor, it is reflected in the country's economy. In 2007, the Philippines received some $2.93 billion in foreign direct investments. By comparison, Vietnam attracted over $20 billion, much of which was encouraged by its young, highly literate workforce.

The ERDT is an attempt to keep up. Of the 154 current ERDT scholars, 33 are in the Ph.D. program while the rest are in the MS program. And with the Technology Transfer Act, which would enable government-funded inventors and innovators to profit from their ideas, already underway, things are starting to look up.

Still, there's a lot to do. The kind of numbers the consortium is aiming for are just enough to keep up with the rest of the region, and still needs the corresponding supporting legislation to become long-term. Much of the infrastructure needed is still in the planning stage, and not all of the research proposals have been approved, but Guevara remains optimistic.

She said if a country is to grow economically, the industry should have high value-added activities ….If the government invests now, taposna-achieve natinyung growth at sakayung scale napinapangarapnatin, mangyayariyan….Hopefully after 10 years [the duration of the project], it has become instinctive for us."

ERDT Consortium Holds Second Meet

Kim Quilinguing

Dr. Guevara stressed the importance of high-level engineering research and development for technology in addressing national issues including economic growth. This is something the Department of Science and Technology (DOST) and the legislature, through its Commission on Science and Technology and Engineering (COMSTE), have acknowledged through their support to the ERDT program.

In his remarks, DOST Undersecretary Fortunato de la Peña added that the ERDT is instrumental in the adoption of a national science and technology plan that will cover engineering, manufacturing, and even health care. He underscored the importance of engineering research and development in increasing productivity in agriculture, construction, and industrial production.

In 2009, the COMSTE and the ERDT sought to pursue projects in emerging fields of engineering and science and technology (EST) while promoting innovation. According to COMSTE Semiconductors and Electronics Panel Chair Dr. Gregory Tangonan, innovation has resulted in the increase of scientific output in solar power-generation, bio-ethanol production, and biomedical research.

"We should make engineering research and development work for our country,"

– Dean Rowena Cristina Guevara, UP College of Engineering, head of the Engineering Research and Development for Technology Second Conference , "Synergy in Multidisciplinary R&D" Diamond Hotel, Manila, February 20, 2009

Specific Directions for 2009

COMSTE is an organization composed of some members of the House of Representatives, the Senate, and highly qualified experts in various fields in science and technology. It reviews educational programs and curriculum, establishes networks among scientific and technological communities, and seeks funding for EST research and development. With topics ranging from increased food production to low cost energy production, the different panels of the COMSTE reached the following suggestions:

• Dr. William Padolina, chair of the Agriculture and Food Panel, emphasized the importance of studies on agricultural gene technology, which can lead to optimal food production.

• Health Sciences Panel Chair and UP Manila Chancellor Ramon Arcadio suggested going into new concepts in health sciences, such as e-learning for health, digitized health records, tele-mentoring in medical transcription and health practices, portable diagnostic kits, and new vaccines. He said ERDT could also go into the development of new medicines from indigenous plants and endemic orgasms.

• From the Energy and Environment Panel, Dr. Alvin Culaba pointed to efficient and cost-effective electricity production, and alternative energy sources, such as bio-gas, local coal, bio-ethanol, solar, wind, and ocean energy.

• Joaquin Quintos IV, chair of the Information and Technology and IT-Enabled Panel Chair, emphasized the need for advanced value-added information and communications technology output.

• Science and Math and Engineering and Education Panel Chair Reynaldo Vea cited a study conducted in the US on Asian-Americans, which found that Vietnamese and Filipinos are not too interested in pursuing graduate studies. Vea said Filipinos should view port-graduate education as important in making the country globally competitive. He was, however, quick to add that the development of highly skilled engineers and scientists starts with developing the youth's interest in engineering research and development and in science and technology.

According to Dr. Guevara, the DOST, through the Science Education Institute (DOST-SEI), has released P202 million to the ERDT for 33 research and development projects. The consortium currently has 152 Master of Science scholars, 34 Ph.D. scholars, 11 visiting professors, and 1 visiting researcher. In 2009, the consortium planned to increase the numbers to 171 Master of Science scholars, 19 visiting professors, and 14 visiting researchers; and have 10 Ph.D. "sandwich" scholars, 17 foreign doctoral, and five post-doctoral scholars. These scholarships are given to individuals who have shown exceptional abilities and dedication to their chosen fields in engineering. The ERDT hopes to conduct more conferences that will enable its members to exchange information and technologies essential to the studies being undertaken. It also hopes to develop and conduct "techno-preneurship" or technological-entrepreneurship classes and make a benchmark of technological business incubators based on international standards.

The consortium provides scholarships for graduate studies in engineering and science and technology and pursues research studies for technological advancement. It has identified energy, environment and infrastructure, information and communications technology, and semiconductor and electronics as its major thrusts. It aims to produce a critical mass of highly-skilled researchers, scientists, and engineers vital to national development because of their capability to translate R&D results into viable industries, undertake high-impact research, pass on knowledge, and identify new S&T directions.

3rd Conference: ERDT Meet Tackles MultiDisciplinary Solutions to Philippine Problems

Celeste Ann Castillo Llaneta

Engineering, in its simplest terms, is the use of scientific knowledge to solve real-life problems. The key, for the engineering community, its partners in the government and industry, is in choosing which problems to solve and which disciplines to tap into in order to solve such problems.

This was the focus of the 3rd Engineering Research and Development for Technology (ERDT) Conference held on September 11, 2009, at the EDSA Shangri-la Hotel. The highly successful conference, which was held in partnership with the Department of Science and Technology (DOST) and the DOST-Science Education Institute (DOST-SEI), revolved around the theme, "Post-Graduate Multi-disciplinary Approach to Solving Philippine Problems."

Elaborating on the need to have a multidisciplinary approach to problems was the main keynote speaker Dr. Ian W. Douglas, Associate Professor of the College of Communications and Information of the Florida State University (FSU), Program Director of the FSU Learning Systems Institute (LSI), and Director of the LSI's Knowledge Communities Research Group, an interdisciplinary group of full-time researchers and graduate students.

It's only in the modern era that we see a mushrooming disciplines," said Dr. Douglas, addressing an audience of over 600 conference participants, including ERDT and Accelerated S&T Human Resource Development (ASTHRD) scholars, government officials, industry representatives, visiting professors, and the faculty and administrators of the ERDT's eight consortium-member universities—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), the University of San Carlos (USC), the University of the Philippines Diliman (UPD) and the University of the Philippines Los Baños (UPLB). Some non-member institutions also participated in this conference.

"The danger is, we are separating these branches, and some of our major problems cannot be solved with one discipline alone," the keynote speaker added. An MA Psychology degree-holder from the University of Glasgow in the United Kingdom, Douglas related his experience at the University of Glasgow where computer scientists and psychologists worked together to study several research problems, including artificial intelligence.

Fr. Bienvenido F. Nebres, SJ, president of the ADMU, recommended going beyond teams to multidisciplinary institutions, including institutions outside the universities. He also reiterated that universities should work with high schools to locate and nurture budding talents.

> *"It's important to think about systems, and to see your part in the system. We need to move from a view focused on the unit or discipline to focusing on improving the world. Systems thinking is the discipline we need to see the whole picture."*
> *-Dr. Ian W. Douglas*

THREE-YEAR MILESTONE

The ERDT Project, a ten-year program fully supported by the DOST, is now on its 3rd year of implementation. It aims to produce engineers with graduate degrees and improve research and development (R&D) programs in engineering in the country with a view of promoting a culture of research in engineering institutions.

The ERDT conference commemorates this milestone by showcasing the achievements and progress made by its consortium-member universities, scholars, and faculty.

Universities play a key role in improving national competitiveness by providing manpower in various fields and undertaking research and development activities in areas that are vital to national development. UP President Emerlinda R. Roman stated in her welcome remarks that all those involved in the consortium are doing just that.

Marcelo P. Salazar, DM, chancellor of the MSU-IIT, urged the ERDT consortium-member universities during his opening remarks to reflect on the strengths that they have developed as part of the ERDT for the past three years, and on the opportunities for a continuing improvement.

Dean Guevara with the ERDT faculty and scholars from the College of Engineering (Photo by UPDIO)

PAPER PRESENTATIONS

After the first segment of the conference, which was hosted by Dr. Feliciano Alagao, Dean of the MSU-IIT College of Engineering, and Dr. Antonia N. Tanchuling, Associate Dean of the UPD College of Engineering, the conference participants broke off into seven simultaneous parallel paper presentations. Each presentation revolved around one of the R&D research tracks of the ERDT. Chairing Session 1 of the Information and Communications Technology (ICT) Track was Dr. Supavadee Aramvith of Thailand's Chulalongkorn University, while Dr. Yoshikazu Miyanagi of Japan's Hokkaido University chaired the ICT Track's Session 2. The Environment and Infrastructure Track held three simultaneous sessions chaired by Dr. Tetsuo Yai of the Tokyo Institute of Technology, Dr. Benito M. Pacheco, director of the UP Institute of Civil Engineering, and Dr. Arnold Elepaño of UPLB, respectively. Session chair of the Semi-conductor and Electronics Track session was Dr. Joel Joseph Marciano, Director of the UP Electrical and Electronics Engineering Institute (UP-EEEI), while Dr. Jun Chen of Australia's Wollongong University chaired the Energy Track session.

A total of 46 research papers were presented by ERDT researchers and scholars from various consortium-member universities. After the sessions, the participants took the time to look over 35 research posters and to interact with the researchers standing by their posters.

The Best Paper Award and a P10, 000 cash prize were given to UPD College of Engineering researchers Diocel Harold M. Aquino, Maria Antonia N. Tanchuling, and Leah S. Fontanilla for their research paper on "Effect of Flow Rates in the Removal of Lead Ions from Solution in a Coco Peat Column." Two posters were chosen to receive the Best Poster Award and the cash prize of P5, 000 each: UP-EEEI's Brigitte Anne L. Bautista, Philip A. Martinez, Reniel Alexis N. Padua, Paul Jason R. Co, and Joel Joseph S. Marciano, Jr. for their poster on "Development of an RFID-based Lane-level Positioning System" and DLSU's Jurex C. Gallo, Mary Ann A. Mactal, Josephine Q. Borja and Susan M. Gallardo for "Photocatalytic Color Removal of Dyes using Nanotitania."

FELLOWSHIP

At the latter part of the conference, a fellowship was hosted by ADMU's Patty Laurel and Dr. Eric Paringit, chairman of the UPD Department of Geodetic Engineering. The conference participants were treated to a raffle and a performance by the UP Kontemporaryong Gamelan Pilipino (UP Kontra-Gapi).

The members and staff of the ERDT Steering Committee were also credited for their hard work. The ERDT Steering Committee was led by Dr. Rowena Cristina L. Guevara, Dean, UP College of Engineering, Program Leader, with members and respective project leaders: Dr. Fabian M. Dayrit, Dean, College of Science and Engineering, ADMU; Dr. Ireneo C. Agulto, Dean, College of Engineering, CLSU; Dr. Pag-asa D. Gaspillo, Dean, College of Engineering, DLSU; Dr. Jonathan A. Salvacion, Dean, Graduate School, MIT; Dr. Feliciano C. Alagao, Dean, College of Engineering, MSU-IIT; Dr. Nicanor S. Buenconsejo, Dean, College of Engineering, USC, Dr. Arsenio N. Resurreccion, Dean, College of Engineering and Agro-Industrial Technology, UPLB; and Dr. Norbert S. Que, Associate Dean for Academic Affairs, UPD College of Engineering.The 3rd ERDT Conference was sponsored by the Shell Exploration Corporation, Chiyoda Philippines Corp., IEEE/IET Electronic Library, and Techinfo Solutions Inc.

4TH ERDT CONFERENCE

R&D: ROADMAP OF THE PHILIPPINES

Celeste Ann Castillo Llaneta

Scientific and engineering research and development (R&D) done within the confines of the university laboratory is well and good. But for technology to really have an impact, it has to be brought out to the "real world"—to the market and ultimately to the consumers themselves.

For researchers who are ready to bring the fruits of their labor to the greater arena, a panel of experts from abroad give the following advice: 1.) Professional knowledge must be balanced with a sense of what is practical and an understanding of society's needs; 2.) Defining the mission of R&D and charting and R&D roadmap will serve as guide to success; 3.) Designs should be both innovation-driven and sustainable; 4.) Linking up with the industry, private sector, and government is important; 5.) Focus should be a fast-growing field such as biotechnology; and 6.) Research should be truly interdisciplinary.

These were the subjects of the Engineering Research and Development for Technology's (ERDT) fourth conference held on February 19, 2010 at the Sofitel Philippine Plaza Manila, CCP Complex, Roxas Blvd., Pasay City, with the theme "Charting the R&D Roadmap of the Philippines."

Held in partnership with the Department of Science and Technology (DOST) and the DOST-Science Education Institute, the conference was attended by students, faculty members, researchers, and administrators from the eight consortium universities under the nationwide ERDT Project, namely; 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 San Carlos (USC), UP Los Baños (UPLB), and UP Diliman (UPD), the latter having spearheaded the consortium in 2007.

The six speakers, who discussed the ways academe could bring the results of engineering R&D to end-users, including government, industry, and ordinary consumers, were: Dr. Yozo Fujino, Professor of Civil Engineering at the University of Tokyo, Japan; Dr. Gavriel Salvendy, Professor of Industrial Engineering of Tsinghua University, China; Dr. Joel L. Cuello, Professor of Biosystems Engineering at the University of Arizona, US; Dr. David Ian Bishop, Professor of Geomatics, University of Melbourne, Australia; Dr. Chang-Ho Park, Professor of Chemical Engineering at Kyung Hee University, South Korea; and Dr. Nina Ossanna, Director of the Business Development and Strategic Planning, BIO5 Institute of the University of Arizona.

The members of the ERDT Steering Committee pose with the six guest speakers

The importance of the various discipline and sectors working together on a project was emphasized by Dr. Fujino. He also stressed the need for students to not only have professional knowledge but also a sense of practicability, as well as an understanding of society and its needs, which can be attained when students apply their research in the field.

Dr. Salvendy advised to concentrate on research the yields economic benefits in the shortest time possible, on research that would improve research, and on research that would earn prestige in the international scene.

Dr. Cuello emphasized the primacy of engineering education—particularly an innovation-driven and sustainability-centered engineering design—in a competitive and interconnected global economy. He enumerated seven laws of sustainability, as exemplified by the rice terraces of Banaue, to wit: the laws of availability, harmony, knowledge, re-use, symbiosis, peers, and community.

The Australian Cooperative Research Centre (CRC) Program was introduced by Dr. Bishop as a possible model for the Philippines. This program is oriented toward research utilization and commercialization, and actively supports end-user-driven partnerships between researchers and the industry.

Dr. Park encouraged engineers to focus, despite the world moving toward biotechnology economy, on new business opportunities in biopharmaceuticals, energy/biochemical materials, environmental remediation, agriculture and food products, and bio-resources. While Dr. Ossanna underscored true interdisciplinary research among the various university departments and making technology transfer easier for researchers and research teams.

Finally, DOST Secretary Estrella F. Alabastro expressed the hope that venture capitalists get more involved in the difficult and critical stage of incubating R&D-based technologies for transition to the commercial stage. She cited the Open Technology Business Incubator at the UP Science and Technology Park along CP Garcia Ave., UPD, Quezon City—launched in partnership with the DOST, the Philippine Economic Zone, the Advanced Science and Technology Institute, and UP—as an example of collaboration between government and private companies.

The 4th ERDT Conference was organized by the ERDT Steering Committee, led by UPD College of Engineering Dean Rowena Cristina L. Guevara. Project leaders for their respective universities are: Dr. Fabian M. Dayrit for ADMU; Dr. Ireneo C. Agulto for CLSU; Dr. Pag-asa D. Gaspillo for DLSU; Dr. Jonathan L. Salvacion for MIT; Dr. Feliciano C. Alagao for MSU-IIT; Dr. Nicanor S. Buenconsejo for USC; Dr. Arnold R. Elepaño for UPLB; and Dr. Norbert S. Que for UPD.

5th ERDT Conference on "Philippine Competitiveness"

Celeste Ann Castillo Llaneta

To commemorate its fourth year of implementation, the Engineering Research and Development for Technology (ERDT) Program held its 5th ERDT Conference on September 10, 2010 at Sofitel Philippine Plaza Manila, with the theme "Philippine Competitiveness through ERDT".

"The theme rightly focuses on what I consider an urgent concern for the government, the academe, and the private sector in an era characterized by trade liberalization and globalization," said Prof. Marcelo P. Salazar, chancellor of the Mindanao State University-Iligan Institute of Technology (MSU-IIT), in his opening remarks. MSU-IIT is one of the eight consortium universities under the ERDT Program. He added, "To be competitive in this era, a country can no longer be dependent only on the traditional factors of production or a specific traditional advantage. There is a need to have high levels of learning and skills, continuous innovation, efficient communication and transport infrastructure, and supporting, enabling environment. Attaining competitiveness is difficult, especially for developing countries, but it can be facilitated by focusing on technology." These are what the ERDT has been doing for the past three years.

For its 5th conference, the ERDT Steering Committee gathered together representatives of four departments in the government—the Departments of Science and Technology (DOST), Public Works and Highways (DPWH), Energy (DoE), and Environment and Natural Resources (DENR). They presented their thrusts for a competitive Philippines to a record-setting audience of over 750, consisting of ERDT MS and PhD scholars, Engineering faculty and administrative officials from the eight consortium universities, government and private industry representatives, and guest professors from abroad.

DOST Secretary Mario G. Montejo noted in his keynote speech that the 5th ERDT Conference's theme was close to his heart. He described some of DOST's innovative ideas and projects undertaken and considered within the first two months of his term where innovation technology played a crucial role. These project include:

• The rehabilitation and reactivation of a flood monitoring system that could help prevent another disaster the scale of Typhoon Ondoy; through the use of local technology, this will cost P3M to P5M only instead of the estimated P200M as previously quoted if imported technology will be used;

•A flood monitoring and forecasting system on the DOST website that will show the actual flood water level of the Marikina-Pasig River at an interval of 10 minutes and the forecast level every after two hours; a similar flood monitoring and forecasting system for the country's 18 major river plains, showing actual and projected flood levels for specific barangays in every river system; both systems to use 100 percent locally-developed technologies that will cost a fraction of the cost of a similar system imported from abroad;

•A typhoon-tracking system to be based on low pressure indicators and to use more automatic weather stations, which will generate a map of the Philippines indicating low and high pressure zones and will be updated every 10 minutes—a system that few countries, if any, are utilizing; this system shall use locally

developed innovations of technology, as well;

•The installation of buoys with radio stations located around 6 km away from shorelines that will monitor and measure the size of ocean waves in order to supply ships, boats, and fishermen with the actual size of waves, as well as typhoon signals; two of these have already been purchased at P32M each, but Sec. Montejo is hopeful that by using local technology, the DOST can reduce the cost of the buoys to P5M each;

•A locally-developed monorail or mass transit system equivalent to the MRT or LRT, but through the use of value engineering, to develop a local system that will cost only a fourth or a fifth of the estimated cost of imported systems;

•Windmills in the Ilocos and other regions where the use of wind energy is a viable option, at perhaps 40 percent less than the cost of imported technology;

•Design and construction of ship-to-shore cranes through the cooperation of local port operators, to cost less than those purchased abroad with the hope of eventually reducing shipping and port costs and developing a crane-manufacturing industry in the country;

•A simple but effective mosquito-trap that will limit the breeding of dengue-carrying mosquitoes.

"For our country to really develop, our economy or part of our economy should be science and technology (S&T)-based, and we in the DOST hope to be the catalyst for this," said Sec. Montejo, citing three main components of this goal, namely; 1.) to create or develop S&T human resources, where the ERDT program plays a key role in developing the critical mass of the S&T workforce needed to achieve a technology-based economy; 2.) to create the environment that would encourage these S&T professionals to stay in the Philippines so that the country can benefit from their expertise and knowledge; and 3.) to encourage the private sector to go into S&T-based activities.

"This is our direction in the DOST," Sec. Montejo concluded, "All of you here have a role in it. Our country will prosper only through science and technology, and this is a given fact."

Engineering and technology innovation also form the core of programs and projects of the other departments. Assistant Secretary Raul C. Asis presented the thrusts of the DPWH for the next six years, which includes the maintenance, rehabilitation, improvement or upgrading and the construction of the country's national arterial roads, secondary roads, and bridges; prioritizing roads that will serve designated key agricultural production areas, tourism destinations and growth centers; and encouraging more private-public road projects.

6TH CONFERENCE:

PASCUAL NOTES ACHIEVEMENTS IN ENGINEERING R&D

Celeste Ann Castillo Llaneta

The Department of Energy's presentation of the business point of view on renewable energy development in the Philippines, the direction the government is taking to ensure energy independence and greater energy self-sufficiency, was delivered by Engr. Roger Victor E. Buendia, OIC, president and CEO of the Philippine National Oil Company Renewables Corporation. Forester Levi Florido, representing Undersecretary for Policy and Planning Ignacio L. Demetrio, presented DENR's programs and projects that are specific manifestations of the use of engineering and technology innovation in relation to environmental concerns and sustainable management and development of natural resources. These are based on DENR's six-point agenda: clean air and water, proper waste management, productive management of forest lands and other resources, climate change management, protection of marine resources, and the anti-corruption drive.

During the plenary held after the presentations of the government representatives, Dr. Jan M. Rabaey, University of California—Berkeley Professor of Electrical Engineering and Computer Sciences, discussed an aspect of information technology that would be part of the research agenda for the last decade—the need for an energy-intelligent router or management system for IT platforms and computer networks capable of "doing nothing well", that is, of shutting off the power to computers or instruments working on low levels of performance. This can translate to massive amount of energy conserved, given the ubiquitousness of computer networks all over the world.

In speaking about improving competitiveness through research and development in the power industry, Dr. Stanley Santos, program manager of the Oxygen Combustion Technology IEA Greenhouse Gas R&D Program based in Chaltenham, United Kingdom, discussed the need of the government to establish infrastructure and enact policy changes in order to address the issue of energy poverty in the country by focusing on power security, affordability of electricity and gas, sustainability—including environmental sustainability and challenge of long-term carbon emission—and the development of renewable energy sources in the country, particularly geothermal energy.

In the second half of the conference, eight parallel sessions were held: four under the "Environment and Infrastructure" research track; two under the "Information and Communications Technology" research track; one under the "Energy" research track; and one under the "Semi-conductors and Electronics" research track. A total of 76 research papers by ERDT MS and PhD scholars were presented. A poster exhibit featuring 33 poster papers were also put on display in the lobby. At the end of the conference, two poster papers received the best poster awards and a cash prize of P4, 000, while the best paper awardee received a price of P5, 000.

New UP College of Engineering (UPCOE) Dean Dr. Aura C. Matias, in her closing remarks, said that she was happy to be able to serve as the new ERDT Program Leader, succeeding Dr. Rowena Cristina Guevara. She gave a brief

review of the ERDT Program's performance in the last three years. Initiated by the UPCOE in 2007 and approved by former President Gloria Macapagal Arroyo that same year, with funding amounting to P3 billion for human resource development, research and development and infrastructure development, the ERDT Project is participated by a consortium of eight universities with the most well-developed Engineering and Agro-Engineering programs: Ateneo de Manila University, Central Luzon State University, De La Sale University, Mapua Institute of Technology, Mindanao State University-Iligan Institute of Technology, the University of San Carlos, UP Diliman, and UP Los Baños.

To date, the ERDT Program has been able to manage 488 out of a total of 596 MS scholars to graduate, or 81.57 of the ERDT's target; and 82 out of 112 PhD scholars, or 73.21 percent of the target, from its consortium-member universities. The program has also produced 49 DOST-approved research proposals amounting to P313.26 million. It has been able to conduct scientific conferences that served as venues for the sharing of ideas and proposals, and for showcasing the works of consortium-member universities and scholars. In addition, the ERDT Program has also been working towards possible collaboration with other universities in Taiwan, Thailand, Singapore, and the US through visits abroad, to establish technology business incubators.

"We have come to the final leg of what we hope is just the first stage towards our goals," Dr. Matias summed up. "As we look forward to the coming years, we hope there will be a continuation to the programs and activities we have started. Whether it is the ERDT or some new program name, I am optimistic that government agencies and industries have begun taking interest in the talents of our local engineers. Let us expand our numbers and continue exhibiting the creativity and ingenuity of Filipino engineers with innovative, relevant and beneficial useful research outputs."

What has UP's Engineering Research and Development for Technology (ERDT) program accomplished in the past three years? UP President Alfredo Pascual said that since its full implementation in 2008, the ERDT program has resulted in the graduation of 73 MS Engineering students and one PhD student, as well as the awarding of 464 MS scholarships and 88 PhD scholarships.

In his opening remarks at the 6th ERDT Conference on February 18 of the current year at the Diamond Hotel in Manila, Dr. Pascual said that "a number of ERDT graduates is now pursuing technology business start-ups. In fact, two of them have set up their own companies as the DOST-UP Enterprise Program for Technopreneurship. Other ERDT graduates are gainfully employed as development engineers in technology-based industries."

To keep ERDT graduates from leaving the country for greener pastures abroad, he reiterated his vision to strengthen UP's research capabilities in partnership with the government and the industries to provide scientists and engineers "the opportunities to put their expertise to work, and to work productively."

In keeping with its theme "Addressing the Grand Challenges through Engineering Innovations," the keynote speeches in the 6th ERDT Conference focused on three of the challenges ERDT scholars must face.

These are the lack of science and technology research education in the country, which contributes to our slow economic development and low level of global competitiveness; translating engineering research and technological innovation into viable economic ventures through technological entrepreneurship; and the broad fields open to innovation in all its form.

Department of Science and Technology (DOST) Secretary Mario Montejo said that The Global Competitiveness Report 2010-2011 of the World Economic Forum ranked the Philippines 16th out of 22 Asian countries, and 85th out of 139 countries in the world in terms of global competitiveness.

He said the Philippines ranked 96th in terms of technological readiness, 111th for innovation, 88th for foreign direct investments and technology transfers, 108th for quality of scientific research institutions, and 96th in terms of availability of scientists and engineers.

Sec. Montejo said that given "the great talent and creativity of the Filipino, we can change things for the better soon." The ERDT is the means to accomplish this, he said, by continuing to build a critical mass of research scientists and engineers (RSEs) and to conduct quality research and development (R&D) work on disaster mitigation, poverty alleviation, ag-

riculture, semiconductors, and environment and energy "with the end of making the lives of Filipinos better."

He also cited the numerous projects the DOST is working on or supporting, including improved weather forecasting that enables hourly weather updates; a real-time disaster warning system for landslides; a locally-developed Doppler radar; a PC tablet to be used as an educational module in support of learning for elementary students; a locally-developed, locally-sourced mass transit system; a pilot lab for improved mining of gold, copper, nickel and iron, and the exploration of a process that can extract gold from the mercury tailings produced by gold-mining. "These are the S&T initiatives that the whole Cabinet [of President Aquino] would fully support, because these are centered on (1) creating jobs, (2) creating economic activity for S&T initiatives, and (3) it is exactly the mandate of the DOST." He added that the DOST will support the ERDT in the years to come.

Tapping into his more than 30 years of experience as a successful design engineer, entrepreneur, CEO and venture capitalist in Silicon Valley, Dr. Diosdado Banatao, founder and managing partner of Tallwood Venture and one of the UP College of Engineering's most generous donors for research engineering, gave a detailed talk on setting up a successful start-up venture. To start a technology company, he said that one should have a better solution to a design or technology problem. According to him, the five major start-up success factors are addressing a major market need, providing a unique solution, executing a sound plan, having a strong technical and management team, and possessing solid financial support.

Dr. Filemon Uriarte, Jr., chairperson of LAUDS Technologies, Inc., academician of the National Academy of Science and Technology and former secretary of the DOST, said that "innovation goes beyond R&D [research and development]," as it involves users, suppliers, and consumers. He said that innovation also covers government, businesses and NGOs across borders, sectors, and institutions. Innovation, Dr. Uriarte articulated, can be classified into four types—product innovation, process innovation, marketing innovation, and organizational innovation.

He further identified five priority actions to promote innovation: instituting policies that encourage investment in innovation; providing adequate public and private investment for both engineering and scientific R&D; facilitating the transfer and commercialization of innovative technological advances; promoting partnerships that link R&D performers and users; and creating and supporting life-long education initiatives to enhance competitiveness.

The ERDT Program consists of a consortium of eight universities, which includes 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 San Carlos (USC), UP Los Baños (UPLB), and UP Diliman College of Engineering (UPD-COE) as the lead agency. It was approved by then President Gloria Macapagal-Arroyo in 2007 and was given an initial fund of P3.5 billion. This was allocated among the four major components of the program, namely, scholarships that aim to produce a critical mass of research-trained engineers with graduate degrees; research and development; infrastructure development; and faculty development. According to UPD-COE Dean and ERDT Program Leader Dr. Aura Matias, the 6th ERDT Conference marked a fitting close to ERDT's first cycle and the beginning of its second cycle.

"Our message for this year is technological entrepreneurship and innovation," Matias said in her closing remarks. "We have to go beyond R&D. We have the talent pool, and we have worked hard for the past three years. It is time for us to move beyond the classroom. It is time for us to show that engineering by Filipinos for the Filipinos works."

The members of the ERDT Steering Committee are UPD-COE Dean and ERDT Program Leader Matias. The project leaders of the respective consortium universities are ADMU College of Science and Engineering Dean Fabian Dayrit; CLSU College of Engineering Dean Ireneo Agulto; DLSU College of Engineering Dean Pag-asa Gaspillo; MIT Graduate School Dean Jonathan Salvacion; USC College of Engineering Dean Andresa Allera; UPLB Institute of Agricultural Engineering Director Arnold Elepaño; and UPD-COE Associate Dean for Instruction and Research Menandro Berana.

7th Conference

focuses on 'carbon-neutral' economy

Celeste Ann Castillo Llaneta

For its 7th conference, the Engineering Research and Development for Technology (ERDT) focused on what ERDT Program Leader and UP Diliman College of Engineering Dean Aura Matias referred to as "a very urgent matter that not only affects our country but is in fact a global concern—that is our environment and the growing concern for the effects of climate change."

With the conference theme "Sustainability through ERDT: Towards a Carbon-Neutral Economy," the issue of the environment and climate change is indeed a hot topic for ERDT scholars.

"In 2010 alone, around one-third of the P200 million worth of Department of Science and Technology (DOST)-approved research projects were in the Environment and Infrastructure research track [of the ERDT]. This underscores the focus and the need for such activities in this area," Matias said.

She added that "aspiring to be carbon-neutral is not solely the work of researchers and scientists from the Environment and Infrastructure track. The gargantuan task of addressing climate change and its interconnected impact needs a multidisciplinary approach."

Held on September 16 at the Manila Hotel, the 7th ERDT Conference featured two keynote speakers from government.

As the first keynote speaker, Dr. Amelia Guevara, executive director of the DOST-Philippine Council for Industry, Energy and Emerging Technology Research and Development (PCIEERD), presented the research and development (R&D) programs of DOST and PCIEERD that research engineers and ERDT scholars can work on with government.

The DOST's priority R&D areas include food security, environment, energy, and disaster risk reduction and management. On the other hand, the areas of R&D under PCIEERD, which is mandated to spearhead projects related to energy self-sufficiency and alternative and renewable energy, include the development of small-scale wind turbines, microhydro turbines, solar technology, waste-to-energy technology, biofuels, energy conservation, and low-carbon-emitting technology for transportation. The latter includes the Automated Guideway Transit system, the prototype is to be built in UP Diliman.

Conference participant and ERDT Coordinator Nicanor Buenconsejo asks a question during the open forum while ERDT Program Leader Aura Matias looks on.

As a keynote speaker, Department of Environment and Natural Resources Undersecretary Analiza Teh stressed the DENR's recognition of the efforts of the ERDT to address sustainability concerns and resource management and utilization. Usec. Teh enumerated the DENR's programs and policies in areas such as clean air, clean water, productive forests, productive lands, viable systems and life-support systems, mining, and solid waste management. Engineering research and technology innovation is required in each area. This is particularly true for the DENR's ongoing research agenda to push for forestry plantations as a means to achieve carbon neutrality, as well as research for more accurate estimation of carbon density and sequestration rates of forestry plantations. The latter's objective is to provide information for carbon trading, carbon accounting, and a clean-development mechanism.

The conference also featured two plenary speakers who spoke on new developments in engineering happening worldwide. Dr. Guiseppe Cavallaro, professor at Nanyang Technological University (NTU) in Singapore and program manager of the Wind and Marine Renewables department of the NTU Energy Research Institute, discussed developments in harnessing the ocean as a source of renewable energy. On the other hand, Dr. Alex Waibel, director of InterACT and professor at Carnegie Mellon University (USA) and at Karlsruhe Institute of Technology (Germany), spoke on developments in language technology and cross-lingual computer communications system.

The afternoon featured parallel sessions for the oral presentations of papers in each research track. This was followed by the unveiling of the winning design for the new ERDT logo. Awards and a cash prize of P10,000 each were given to the three best paper contest winners and the three poster contest winners.

Since its full implementation in 2007, the ERDT Program has produced 113 MS and six PhD engineering graduates. It currently hosts 439 MS and 81 PhD scholars among the member-universities of the ERDT consortium—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 San Carlos, UP Diliman, and UP Los Baños.

The ERDT has successfully awarded 92 percent of its target number of MS scholars and 74 percent of its target number of PhD scholars. Program Leader Aura Matias expressed optimism in reaching the 100-percent mark as the ERDT Steering Committee "continues to campaign and do road shows in other universities all over the Philippines (to invite engineers and engineering students) to partake of the opportunity to earn graduate degrees in the eight universities that are members of the ERDT consortium."

Coupled with the human resource development component of the ERDT is its R&D component under four identified research tracks—Energy, Environment and Infrastructure, Semiconductors and Electronics, and Information and Communication Technology. Dr. Matias reported that as of May 2011, 59 ERDT projects amounting to more than P327 million have been approved by DOST.

1ST ERDT CONGRESS

Dr. Menandro S. Berana

The 1st ERDT Congress was held at the Philippine International Convention Center, Metro Manila on February 24, 2012. With the theme "The Inventive Engineer: Patents and Commercialization", the event aimed to educate the attendees, who are mostly Engineering Research and Development for Technology (ERDT) scholars, the systems on intellectual property protection and technology transfer and ways of nurturing an innovative idea from inventive steps to commercialization. As of that date, the ERDT program has graduated 249 masters and 5 doctorate scholars. Some of these graduates ventured into introducing new or innovating current technologies and formed their start-up companies. Aside from providing engineers with advanced knowledge to work for the industry, the ERDT program also envisions to have its graduates create industry out of their innovative ideas that spring out from their expertise. Prelude to the event were seven conferences that served as avenues for synergy among the academe, industry and government. During the conceptualization of the event, it was decided to hold a congress every year.

The event was graced by Dr. Aura C. Matias, the Program Leader of the ERDT, by welcoming guests and attendees and reporting a brief update of the ERDT program. The keynote speech on Filipinnovation by DOST Undersecretary Fortunato T. Dela Peña soon followed. He reported on the accomplishments of the Filipinnovation program in its action on the four strategic areas of the National Innovation Strategy namely strengthening Filipino human capital, supporting business incubation and acceleration efforts, regenerating the policy environment for innovation and upgrading the Filipino mindset towards a culture of innovation. The keynote highlighted the supports offered by DOST to Filipinos on developing human capital and commercializing innovative ideas.

The first panel focused the discussions on current regulations on intellectual property rights and systems of technology transfer which are important information to ERDT scholars in nurturing their innovative ideas. The panelists were Atty. Andrew Michael S. Ong, Deputy Director-General of IPO Phils.; Atty. Jose Maria A. Ochave, Senior Vice President of Unilab; Dr. Reynaldo L. Garcia, Director of the Technology Licensing Office of University of the Philippines System and Ms. Patricia Georgina G. Domingo, Program Manager of PhilDev. The moderator of the panel was Dr. Jonathan L. Salvacion, ERDT Project Leader of Mapua Institute of Technology.

The second panel discussed the importance of assessing the market and intellectual property potentials of an idea or product. It was stressed that even though innovative ideas and products that sell in the market should be applied for intellectual property by the owners for protection and benefits, it is not guaranteed that ideas and products that are applied for intellectual property rights but not tested in the market will sell. The panelists were Engr. Ramon I. Castillo, President of Innovatronix Inc. and Dr. Benjamin S. Santos, National Chairman of the Board of Filipino Inventors Society, Inc. The panel was moderated by Dr. Arnold R. Elepaño, ERDT Project Leader of University of the Philippines, Los Baños.

The third and last panel was sharing of success stories of technopreneurs and a discussion on entrepreneurial strategies and advice intended especially for startups. This panel served as an encouragement to scholars to search for technopreneurial opportunities. The members of the panel were Mr. Jose Avelino Flores, Co-Founder of Plug and Play Tech Center; Engr. Roland Jay Miguel, an ERDT alumnus and CEO of GSMetrix Technology Solutions, Inc. The moderator was Dr. Luis G. Sison, Professor and Program Leader of Enterprise in University of the Philippines, Diliman.

Awarding of the winners in each of the four tracks for the poster competiton took place. The event was concluded by Dr. Fabian M. Dayrit, ERDT Project Leader of Ateneo de Manila University, by mentioning the challenges from innovation to commercialization that should be intended for the development of the country and global competitiveness. The knowledge that they gained from the event can help them in facing the challenges.

2012 IEEE Region 10 Conference

(IEEE TENCON 2012) Co-located with 8th ERDT Conference

Dr. Joel Joseph S. Marciano, Jr.

IEEE TENCON 2012 COVER

The 2012 IEEE Region 10 Conference (IEEE TENCON 2012) was successfully held last November 19-22, 2012 at the Radisson Blu Hotel in Cebu, City with the theme "Sustainable Development Through Humanitarian Technology". The IEEE TENCON 2012 received valuable support from the Engineering Research and Development for Technology (ERDT) program of the Department of Science and Technology (DOST).

The IEEE TENCON 2012 was co-located with the 8th ERDT Conference. A total of 346 manuscripts were submitted, with all papers undergoing a blind peer review process. A total of 172 papers out of the 346 submissions were accepted and presented in the conference. Submissions came from different countries – reflecting the international status of the IEEE TENCON. This also provided an outstanding venue for research activities undertaken by ERDT universities to be presented before an international audience. Table 1 shows the country affiliations of all authors who submitted papers to IEEE TENCON 2012. A total attendance of over 800 people was recorded during the entire duration of the conference.

Professor Paul Berger of Ohio State University, who talked about Plasmonics, Durability and Encapsulation of Organic Photovoltaics. Plenary speakers during the first day included the Chancellor of the University of the Philippines Diliman, Prof. Caesar A. Saloma (Simultaneous application of constraints in filter-based

fluorescence spectral microscopy) and Prof. Gary Yen from Oklahoma State University (State-of-the-Art Evolutionary Algorithms for many objective optimization and applications), another ERDT Visiting Professor. The second day featured the plenary session for the 8th ERDT Conference. The keynote speech was delivered by Prof. Oussama Khatib from Stanford University, who talked about Robots and the Human. Plenary speakers for Day 2 included Prof. Toshio Fukuda of Nagoya University (Human Centered Service Robotics) and Prof. Eryk Dutkiewicz of Macquarie University (Medical Wireless Body Area Networks to Support Future Ubiquitous Health Monitoring and Treatment). The plenary session for Day 3 featured a talk by Prof. Tan Kay Chen from the National University of Singapore. In his talk, Prof. Chen discussed current advances in evolutionary multi-objective optimization. A total of 53 breakout sessions was held with topics ranging from Computer Architecture, Circuits & Systems, Robotics and Mechatronics, Power & Energy, Networks, Signal Processing, Software & Database Systems, Computational Intelligence to Power Electronics. A feature of the 2012 IEEE TENCON was the special session on Humanitarian Technology and Women in Engineering.

The IEEE TENCON 2012 and the 8th ERDT Conference had the distinct honor of having the immediate past Director of IEEE Region 10 Yong Jin Park, the current Director Prof. Lawrence Wong and the Director-elect for 2013 Prof. Toshio Fukuda in attendance.

Country	Authors	%	Papers (1st author)	%
Philippines	269	31.2	101	32.4
India	150	17.4	65	20.8
Japan	98	11.4	31	9.9
Korea	93	10.8	28	9
Malaysia	32	3.7	15	4.8
Taiwan	24	2.8	5	1.6
Australia	21	2.4	9	2.9
Bangladesh	21	2.4	5	1.6
Singapore	20	2.3	6	1.9
United Kingdom	19	2.2	5	1.6
Thailand	13	1.5	5	1.6
Indonesia	12	1.4	4	1.3
Sri Lanka	12	1.4	3	1
Iran	12	1.4	6	1.9
USA	12	1.4	1	0.3
Turkey	10	1.2	3	1
Pakistan	8	0.9	5	1.6
Vietnam	7	0.8	2	0.6
P.R. China	6	0.7	3	1
Brazil	3	0.3	1	0.3
New Zealand	3	0.3	1	0.3
France	3	0.3	1	0.3
Canada	3	0.3	1	0.3
Germany	2	0.2	1	0.3
Saudi Arabia	2	0.2	2	0.6
Poland	2	0.2	1	0.3
Sweden	2	0.2	0	0
Ethiopia	1	0.1	1	0.3
Nepal	1	0.1	1	0.3
Algeria	1	0.1	0	0
TOTAL: 862				

Table 11: IEEE TENCON 2012 Authors by country (total of 862)

ERDT R&D Summit 2012

Pepito T. Dizon

With almost 300 participants from the government, academe, industry and non-government organizations, the Engineering Research and Development for Technology (ERDT) successfully conducted its Research and Development (R&D) Summit 2012 last December 7, 2012 at the Diamond Hotel Manila.

The theme of the Summit was "Strengthening Synergies between Industry and Academe towards a Needs-Based Research." The R&D Summit 2012 served as a venue for the five ERDT R&D Tracks to present their agenda to its various stakeholders. From the theme itself, the Summit also aimed to solicit inputs from the participants especially from the private sectors to further improve each track's agenda and invite them to invest in R&D activities and create collaboration efforts with the ERDT Consortium.

This year's Summit started with the welcome remarks delivered by the ERDT Program Leader Dr. Aura C. Matias. She enlightened the participants by describing the structure of the ERDT R&D, how it works, and what are the accomplished and on-going projects. The remarks was followed by an opening message of the Department of Science and Technology (DOST) Secretary Mario G. Montejo which was read by Dr. Carol M. Yorobe, DOST Undersecretary for Regional Operations. Some of the salient features of the message discussed where on how R&D contributed in the lives of every Filipino especially in times of disaster such as typhoon and what it is stored for R&D in the future in the Philippines.

The R&D agenda presentations and open fora began with the Environment and Infrastructure Track which was delivered and facilitated by its Track Heads Dr. Alexis P. Acacio and Dr. Maria Antonia N. Tanchuling. It was followed by the Energy Track which was tackled by one of its Track Heads Prof. Miguel T. Escoto and facilitated by Prof. Renato T. Goco. The next R&D agenda was the Semiconductor Materials and Electronics Track which was reported and facilitated by its Track Heads Dr. Joel Joseph S. Marciano and Dr. Leslie Joy L. Diaz. The fourth presentation belonged to the Information, Communication and Technology Track. Its R&D agenda was presented and facilitated by its Track Heads Dr. Adrian Roy L. Valdez and Dr. Ariel C. Blanco. The Manufacturing and Machinery Track was the last to report. This track was created months before the Summit in response to the increasing potential of the manufacturing in boosting the Philippine economy. Its R&D agenda was presented by one of its Track Heads Dr. Iris Ann G. Martinez and facilitated by Engr. Emmanuel A. Lim.

Prior to the Summit, each track handled series of focus group discussions, round table discussions, and one-on-one interviews with participants coming from the government, industry, academe and civil society organizations. The discussions where intended to come up with a solid R&D agenda by surveying the needs of the industry and matching them with the capacity of the academe and aligning them with government priority plans.

The Summit was concluded by the closing remarks rendered by Dr. Rowena Cristina L. Guevara, Executive Director of DOST – Philippine Council for Industry, Energy and Emerging Technology Research and Development. At first, Dr. Guevara highlighted the success of the ERDT by sharing stories of how she was personally greeted by the program's scholars in different places in the country when she travels. She added that in her local travels, she noticed the huge potential of our manufacturing industry and that there are lots of locally produced products in provinces that are really good for global commerce but have not penetrated the local market. Dr. Guevara further said that perhaps this is where R&D collaboration is needed. Before she ends her speech, Dr. Guevara cited Manuel V. Pangilinan, a business tycoon investing in incubation. Dr. Guevara added that it takes courage for Mr. Pangilinan to do that since the probability of success for that investment is very low but when a single incubator succeeded, its profit exceeds one's investment and even losses from the other incubators which failed. As a final note, Dr. Guevara highly encouraged and invited the industry people to never be shy and never be afraid to invest in R&D related activities.

Other Activities

1 Technology Entrepreneurship

The following are series of technology entrepreneurship classes that had taken place since the start of the ERDT Program:

- Summer 2008: 65 students
- Summer 2009-2010: 74 students (Instructor: Prof. Matthew Bristow)
- Summer 2010-2011: 163 students (Instructors: Prof. Matthew Bristow, Prof. Nestor Rañeses, and Dr. Luis Sison)
- Summer 2011-2012:122 students (Instructors: Dr. Aura Matias, and Dr. Luis Sison)

In these classes, students learned how to start their own possible businesses wherein the products could be related to the topics of their researches. As part of the class, various business proposals were generated, wherein some got the interest of industry, financing institutions and others evolved into patent application. A scholar can implement startup and operational business strategies in commercializing products related to his research. New ERDT scholars starting this year will be required to take a technology entrepreneurship class either during a regular semester or summer. The class may be an advised elective of the department of a scholar.

2 Thesis Preparation Workshop for ERDT Faculty Advisers

The two thesis preparation workshops for ERDT faculty advisers are the following:

- Faculty Workshop – October 2010, Olongapo City
- Thesis Preparation Workshop – April 19-30 2011, MSU-IIT, Iligan City

Advisers of ERDT scholars will obtain necessary knowledge and strategies in advising through said workshop.

3 Field-Specific Training Programs and Workshops

This component will replace the mere training programs and workshops component of the ERDT program. Group trainings and workshops related to the five ERDT tracks will be organized. ERDT faculty members will gain enhanced expertise on specific areas of interests.

4 R&D Proposal Workshop

This newly introduced component in CY 2011 will deal with organizing workshop for mentoring proponents of ERDT R&D project proposals by experienced researchers in specific fields. Faculty proponents of ERDT R&D projects will be able to satisfactorily propose thoroughly evaluated R&D proposals.

5 ERDT Presidents' Report to the Industry

• EDRT Presidents' Report to the Industry (NCR)
March 19, 2010
Sofitel Philippine Plaza (124 attendees)

•EDRT Presidents' Report to the Industry (Visayas and Mindanao Region)
November 23, 2010
Plantation Bay Resort, Mactan Island Cebu (85 attendees)

6 Technology Benchmarking Initiative

The following are the TBI's that took place since the start of the ERDT Program:

January 11-14, 2008	Singapore, Malaysia, Thailand
February 11-14, 2009	Taiwan: ICT, Semicon and Electronics
October 18-28, 2009	USA: ICT, Semicon and Electronics
March 2-18, 2011	Europe: Renewable Energy and Environmental Programs
June-November, 2012	Round-Table Discussions in preparation for R&D Summit

The latest one which happened in Europe dealt with energy and environmental programs. Several initiatives on renewable energy like enhanced geothermal, wave energy converter and solar-PV can be considered for localization and application in the Philippines. The plan for the next TBI is to visit Korea for innovations in design, product development, business incubation and manufacturing. Korea has reputable industrial strengths in automotive, shipbuilding, engine and equipment manufacturing. Proposed technologies for development, localization, transfer or implementation are expected to spring out from this undertaking.

7 Research Forum at Mapua Institute of Technology

"MAPUA-ERDT research forum"

To cultivate an R&D culture among ERDT Scholars, Mapua Institute of Technology conducted a Research forum with a theme "Mapua-ERDT Research: What Works and What does not Work" last November 29, 2012, which was attended by approximately 130 ERDT scholars and faculty members from MIT. According to Dr. Reynaldo B. Vea, MIT President "Knowing what did not work is as important as knowing what worked. When we venture into something new it is inevitable that some lessons will be learned the hard way. But this will always be better than not having ventured at all. As the saying goes, nothing ventured; nothing gained. The forum aimed to discuss and address the following: (1) How to Do Journal Critique; (2) How to Prepare Research Proposal, Study and (3) How to use Patent Information in selecting a research topic.

Dr. Agustin M. Fudolig, Officer In-Charge of Metals and Industry Research and Development Center of DOST, tackled the first two topics, while Director Carmen G. Peralta of Intellectual Property Office of the Philippines (IPO-PHIL) discussed the third topic and elaborates the importance of intellectual property issues in research.

To encourage the current ERDT scholars to do their researches, the event also holds poster exhibits of the previous researches funded thru DOST-ERDT research grant. We also invited a plagiarism expert from turnitin/ LIBTECH SOURCE PHILIPPINES INCORPORATED. Ms. Angelet San Pedro, shows ERDT students a hands-on demonstration of turnitin products to avoid plagiarism while writing research paper.

PROGRAM ADVISORY COUNCIL (2012-present)

CHAIRMAN: Hon. Mario G. Montejo
Secretary, Department of Science and Technology

MEMBERS: Dr. Amelia P. Guevara
Undersecretary for Research and Development

Prof. Fortunato T. De La Peña
Undersecretary for Scientific and Technological Services

Dr. Filma G. Brawner
Director, Science Education Institute

Dr. Rowena Cristina L. Guevara
Executive Director, Philippine Council for Industry, Energy and Emerging Technology Research & Development

Dr. Aura C. Matias
Program Leader
Engineering Research and Development for Technology

Dr. Diosdado Banatao
Private Sector Representative

STEERING COMMITTEE:

ERDT Program Leaders:

Dr. Aura C. Matias
Dean, UP Diliman College of Engineering
Program Leader (2010-present)

Dr. Rowena Cristina L. Guevara
Former Dean, UP Diliman College of Engineering
Program Leader (2007-2010)

ERDT Project Leaders:

Dr. Augustus C. Resurreccion
Associate Dean for Instructions and Research
UP Diliman College of Engineering (2012-present)
Project Leader UPD (2012-present)

Dr. Menandro S. Berana
Associate Dean for Instructions and Research (2010-2012)
UP Diliman College of Engineering
Project Leader UPD (2010-2012)

Dr. Norbert S. Que
Associate Dean for Academic Affairs (2007-2010)
UP Diliman College of Engineering
Project Leader UPD (2007-2010)

Dr. Evangeline P. Bautista
Dean, School of Science and Engineering, Ateneo de Manila University
Project Leader ADMU (2012-present)

Dr. Fabian M. Dayrit
Dean, School of Science and Engineering, Ateneo de Manila University
Project Leader ADMU (2008-2012)

Dr. Ireneo C. Agulto
Dean, College of Engineering,
Central Luzon State University
Project Leader CLSU (2007-present)

Dr. Feliciano B. Alagao
Dean, College of Engineering
Mindanao State University-Iligan Institute of Technology
Project Leader MSU-IIT (2007-present)

Dr. Rosemary R. Seva
Dean, Gokongwei College of Engineering,
De La Salle University
Project Leader DLSU (2012-present)

Dr. Andrea S. Allera
Dean, College of Engineering
University of San Carlos
Project Leader

Dr. Pag-asa D. Gaspillo
Dean, Gokongwei College of Engineering,
De La Salle University
Project Leader DLSU (2007-2012)

Dr. Nicanor S. Buenconsejo, Jr.
Associate Professor, College of Engineering,
University of San Carlos
Program Coordinator

Dr. Jonathan W. L. Salvacion
Dean, Graduate Studies,
Mapua Institute of Technology
Project Leader MIT (2007-present)

Dr. Arnold R. Elepaño
Dean, College of Engineering and Agro-Industrial Technologies,
University of the Philippines Los Baños
Project Leader UPLB (2008-present)

PRESENT ERDT R&D TRACKS HEADS

Energy R&D Track

- Prof. Miguel T. Escoto, Jr.
  Coordinator, Energy Engineering Program, UP Diliman
- Dr. Rizalinda L. De Leon
  Chairman, Department of Chemical Engineering, UP Diliman

Environment and Infrastructure R&D Track:

- Dr. Alexis P. A. Acacio
  Director, Institute of Civil Engineering, UP Diliman
- *Dr. Maria Antonia N. Tanchuling,*
  Coordinator, Environmental Engineering Program, UP Diliman

Information and Communication Technology R&D Track

- Dr. Adrian Roy L. Valdez
  Chairman, Department of Computer Science, UP Diliman
- Dr. Ariel C. Blanco
  Chairman, Department of Geodetic Engineering, UP Diliman

Manufacturing and Machinery R&D Track

- Dr. Iris Ann G. Martinez
  Chairman, Department of Industrial Engineering and Operations Research, UP Diliman
- Dr. Menandro S. Berana
  Chairman, Department of Mechanical Engineering, UP Diliman

Semiconductor Materials and Electronics R&D Track

- Dr. Leslie Joy L. Valdez
  Chairman, Department of Metallurgical, Mining and Materials Engineering, UP Diliman
- Dr. Joel Joseph S. Marciano, Jr.
  Director, Institute of Electrical and Electronics Engineering, UP Diliman

Program Leaders

Aura C. Matias, Ph.D.
Program Leader 2010-present

Dr. Aura C. Matias is a certified professional industrial engineer and is a highly-respected member of the academe, a prolific researcher, author, and a recognized resource speaker on engineering education, sustainable development, and environmental management. She finished her Doctorate in Industrial Engineering (Human Factors) at Purdue University in Indiana, USA, and earned both her Master of Science in Industrial Engineering (Production Systems/Operations Research) and her Bachelor of Science in Industrial Engineering degrees from the University of the Philippines. She has dedicated more than two decades working for the advancement of science and technology. Proof of this is her being named an Academician by the National Academy of Science and Technology (NAST) in 2011 and her being chosen as one of the 100 Outstanding Engineers of the Century by the UP Alumni Engineers in 2010. She also received the 2007 Outstanding Professional Award for Engineering & Technology from the UP Alumni Association, and in 2006, she received the Achievement Award for Engineering Research from the National Research Council of the Philippines (NCRP). In 2004, she was recognized by the TOWNS Foundation as one of the The Outstanding Women in the Nation's Service (TOWNS) in the field of Industrial Engineering. Dr. Aura Matias is currently the Dean of the UP College of Engineering and Executive Director of the National Engineering Center.

Rowena Cristina L. Guevara, Ph.D.
Program Leader 2007-2010

Dr. Rowena Cristina L. Guevara or Gev is the first woman Dean of the College of Engineering. For two decades, she has consistently received high ratings from her students as among the best teachers they have had. A further testament to her being an excellent teacher was her being chosen as one of the 2010 Metrobank Foundation Outstanding Teachers and one of the top 5 faculty voted as their favorite teacher in DILC's "Great Ideas." Dr. Guevara, the Dean then of the UP College of Engineering, was the proponent and program leader of the Engineering Research and Development for Technology Program from 2007 to 2010, receiving P3.5 billion government funding. The UP College of Engineering, spearheaded the eight-member university consortium. This initiative has put relevant and responsive engineering research and education in the forefront of our country's push for global competitiveness. Under her leadership as the Executive Director of the National Engineering Center, the NEC received the Exemplary Leadership Category Award of the 2nd Gawad LIDER for its outstanding and meritorious contribution in the development of science education in the country from the Dept. of Science and Technology. Dr. Guevara is currently the Executive Director of the Philippine Council for Industry, Energy and Emerging Technology Research and Development.

Project Leaders:

Augustus C. Resurreccion, Ph.D.
Project Leader (2012-present), University of the Philippines Diliman

Dr. Resurreccion is the current Associate Dean of Instructions and Research at the College of Engineering, University of the Philippines Diliman. He obtained his Ph.D. in Biological and Environmental Science at Saitama University, Japan. He is an associate professor in Civil and Environmental Engineering at the Insititute of Civil Engineering and Environmental Engineering Program of UP Diliman. He has published more than 7 ISI papers in reputable journals and participated in more than 40 conferences.

"Serving the country as ERDT Project Leader is not what I originally planned to do, but I am now liking it."

Norbert S. Que, Ph.D.
Project Leader (2007-2010), University of the Philippines Diliman

Dr. Norbert S. Que is an Associate Professor of Civil Engineering at the Institute of Civil Engineering, UP Diliman. His research interests include computational mechanics, fracture mechanics and structural analysis. Together with the former ERDT Program Leader Dr. Rowena Cristina L. Guevara, he was in the lead to the implementation of the ERDT Program since its inception in 2007.

Menandro S. Berana, Ph.D.
Project Leader (2010-2012), University of the Philippines Diliman

Dr. Menandro S. Berana is currently the Chair and an Assistant Professor of the Department of Mechanical Engineering (DME) in University of the Philippines – Diliman. He is also a track head of the Manufacturing and Machinery R&D Track of the Engineering Research and Development for Technology (ERDT) program. He finished his doctorate degree in Toyohashi University of Technology in Japan in November 2009. His specialization is on alternative refrigeration systems, renewable energy and two-phase flows. His interests include cooling and power generation from recoverable heat and other energy sources, energy efficiency, automation and manufacturing systems. Before becoming DME Chair in June 2012, he had served the College of Engineering, UP Diliman as the Associate Dean for Instructions and Research and the Project Leader for UP Diliman in the ERDT Program from August 2010 – May 2012.

Evangeline P. Bautista, Ph.D.
Project Leader (2012-present), Ateneo de Manila University

Dr. Evangeline P. Bautista is the current dean of the School of Science and Engineering. She obtained her BS Math degree from UP Diliman in 1985, her masteral degree from Ateneo de Manila University in 1996, and her doctoral degree in Mathematics from the same university in 2002. Dr. Bautista became Chair of the Mathematics Department from April 2009 to March 2011. She was then appointed Assistant Dean of SOSE for a year before she became the dean. Dr. Bautista is a member of the National Board of the Mathematical Society of the Philippines, was a former Team Leader of the Philippine IMO team and was the director of the Philippine Mathematical Olympiad from 2007 to 2009. She has worked closely with the Department of Education and the Commission on Higher Education. Her area of research is on Self-Dual Codes and Additive Codes.

Fabian M. Dayrit, Ph.D.
Project Leader (2007-2012), Ateneo de Manila University

Dr. Fabian Millar Dayrit is a Professor in the Department of Chemistry, Ateneo de Manila University. He was Dean of the School of Science and Engineering from April 2000 to March 2012. Dr. Dayrit obtained his BS Chemistry degree from Ateneo de Manila University in 1975, cum laude, and his masteral and doctoral degrees from Princeton University in 1978 and 1981, respectively. He has held positions in various boards and committees. He has been chair of the Technical Panel for Nanotechnology under PCIEERD since 2009, and edited and wrote three chapters in the PCIEERD policy paper, Nanotechnology, Prospects and Priorities (2012). He was a member of the Steering Committee, Human Resource Development-Technical Working Group, Engineering Research and Development for Technology (ERDT) Program, from 2007 to 2011, and is currently chair of the National Science Consortium (NSC) which implements the Accelerated Science & Technology Human Resources Development (ASTHRD) Program, both under the SEI-DOST. He has been a member of the Board of Trustees of the Philippine Institute for Alternative Health Care (PITAHC), Department of Health since 2006 and a member of the Editorial Board of the Philippine Journal of Science since 2005. Dr. Dayrit has numerous publications in both local and international ISI journals. He has received numerous awards from the Philippine Development Foundation, the National Research Council of the Philippines and from the National Academy of Science and Technology, recognizing his significant contributions to research in his field. He was elected as a NAST Academician in 2009.

Rosemary R. Seva, Ph.D.
Project Leader (2012-present), De La Salle University

Dr. Seva is the current Dean of the Gokongwei College of Engineering (GCOE) and Director of the Human Factors and Ergonomics Center of De La Salle University. She is the immediate past President of the Southeast Asian Network of Ergonomics Societies (SEANES) and its current secretary. She is also the President of the Human Factors and Ergonomics Society of the Philippines (HFESP). She is a full professor at the Industrial Engineering Department of De La Salle University (Philippines). She has been in the area of teaching and training for 16 years and a consultant of several multinational companies. She obtained her doctorate degree at the Nanyang Technological University (Singapore). She has a master's degree in Ergonomics from the University of New South Wales (Australia) and another master's degree in Industrial Engineering from De La Salle University. She has written a number of papers that dealt on usability, product design, cognitive task analysis, and physical ergonomics in local and international journals. She is a Professional Industrial Engineer and the managing editor of the Journal of Philippine Institute of Industrial Engineers.

"Being an ERDT scholar and fulfilling its obligations is doing service to the country."

Pag-asa D. Gaspillo, Ph.D.
Project Leader (2007-2012), De La Salle University

A Full Professor at Chemical Engineering Department, De La Salle University. She is the former Dean of the Gokongwei College of Engineering from May 2005 to May 2012. She was a two-term President of the Philippine Association for Technological Education, Inc. (PATE), an association of more than 130 engineering schools and universities in the country. She has master's degree in Environmental Engineering from University of the Philippines. She obtained her doctorate degree in Chemical Engineering in Nagoya University.

She was awarded by the Philippine Institute of Chemical Engineering (PIChE) as the "Outstanding Chemical Engineer for Education 2012," a recipient of the "2005 NAST-Hugh Greenwood Environmental Science Award" by the National Academy of Science and Tech-

nology (NAST) of the Philippines, conferred the honor of "University Fellow" in 2005 by the De La Salle University-Manila, and a recipient of the "Institutional Award" in 2006 from the University of Mindanao, Davao City. She is a member of the Editorial Board of the ASEAN Engineering Journal (ASEAN E.J.) ASEAN University Network/Southeast Asia Engineering Education Development Network (AUN/SEED-Net) for the Chemical Engineering field. Her main research interests are in Water and Wastewater Engineering systems and in the Extraction of Essential and Vegetable oils and high value Bio-active substances from natural plants via the Supercritical Fluid Extraction method using Carbon Dioxide. She has over 30 years of teaching experience in Chemical Engineering and has published several papers in water and wastewater treatment, and supercritical fluid extraction.

"ERDT has raised its bar in research through multidisciplinary approach with a noble aim to produce breakthrough ideas and solution to the Grand Challenges of the 21st Century"

Jonathan W. L. Salvacion, Ph.D.
Project Leader (2007-present), Mapua Institute of Technology

Dr. Salvacion, currently Dean at the Mapua Institute of Technology, once taught chemical engineering and served as College Secretary of the College of Engineering, Chairman of the Department of Chemical Engineering, and Executive Director of the Center for Integrative and Development Studies at the University of the Philippines-Diliman. He was also editor of the Engineering Journal, published by the College of Engineering, and the Public Policy journal of the CIDS. His education consists of Japanese and German language courses, a smattering of Russian, basic and advanced courses in photography, and courses on protecting and managing intellectual property (he is a certified patent agent (having passed the 2011 Patent Agent Qualifying Examination) in addition to his three degrees in chemical engineering. Dr. Salvacion currently wears different hats in Mapua-Tech: Dean of the School of Graduate Studies, Manager of the Mapua Innovation and Technology Support Office, Director of the Directed Research for Innovation and Value Enhancement Office, Managers of ERDT-Mapua and all-around office driver. Outside of office hours, he is a family driver, tutor, amateur photographer, student of classical guitar and mathematics, father and husband.

Feliciano B. Alagao, Ph.D.
Project Leader (2007-present), Mindanao State University-Iligan Institute of Technology

Dr. Feliciano "Anong" B. Alagao, the blessed husband of Ms. Florencia V. Alagao and a proud father of three children has his humble beginnings in the City of Tanjay. He has been a consistent honor student from which, he graduated as First Honorable Mention in Elementary, Salutatorian in Secondary and Cum Laude in College. His journey towards seeking knowledge continued in UP Diliman when he took up Master in Mechanical Engineering and finished his doctorate degree in Royal Melbourne Institute of Technology University, Melbourne, Australia last 1995. He started as a humble faculty member in the MSU Main Campus in the year 1978 until he became the Dean of MSU-IIT College of Engineering (COE) for six years, from year 2006 till present. He is widely known as the dynamic, hardworking and dedicated Dean, the Father of the college as he continuously lead the college to the attainment of its many objectives. Not just the Dean of MSU-IIT COE, but also a great Project Leader of MSU-IIT Engineering Research and Development for Technology (ERDT) from year 2008 till present. He continuously inspires and challenges each scholar to do their best and be able to graduate with great research outputs. Hand in hand, Dr. Alagao sees to it that every scholar's needs in their studies will be properly addressed and through ERDT Meetings, students who have exemplary performance were also highly recognized so as to inspire other scholars. Now, we are looking forward to produce ERDT graduates who cannot just graduate on time but also, be able to finish it in less than two years.

"ERDT was manna; it was there when our graduate programs needed it".

Ireneo C. Agulto, Ph.D.
Project Leader (2007-present), Central Luzon State University

Popularly known in the campus as "Rene", Dr. Ireneo C. Agulto is a Full Professor at the College of Engineering. He was born in Rizal, Nueva Ecija on April 5, 1954. Rene finished his Bachelor of Science in Agricultural Engineering at the Central Luzon State University (CLSU) in 1974. He also landed 5th place in the 1975 Agricultural Engineering Licensure Examination. In 1978, he finished his master's degree in Agricultural Engineering at the University of the Philippines at Los Baños. Finally, in 1984, he finished his Ph. D. in Engineering at Utah State University, Logan, Utah, USA. Rene rose from the ranks of Assistant Instructor to a Full Professor. He was assigned, in addition to his teaching position, as the College Registrar of the College of Engineering from 1978-1981 after which, he was elected Chair of the Agricultural Engineering Department from 1981-1992. From 1996-1999, he was appointed as the Director of the Regional Science Teaching Center (RSTC) of Region III. From 1999-2000 he served as Manager of the Affiliated Non-Conventional Energy Center (ANEC) of Region III and the Aurora Province. In 2002, he became the Associate Dean of the College of Engineering. Finally, in 2006 up to the present, he was designated as the Dean of the College of Engineering. It was in his capacity as College Dean when CLSU's Agricultural Engineering Program was recognized by the Commission on Higher Education (CHED) as one of the only two Centers of Excellence (COE) in the country today. It was also under his administration as College Dean when the Agricultural Engineering Program was accredited as Level III accredited program by the Accredited Agency of Chartered Colleges and Universities of the Philippines (AACCUP) and the Civil Engineering Program as Level II accredited program. As Dean of the College of Engineering, Rene is also serving as CLSU's Project Leader of the Engineering Research and Development for Technology (ERDT) program since 2008. As an ERDT Project Leader, he was able to recruit 59 MS and 9 PhD graduate scholars in the field of Agricultural Engineering. To date, CLSU has produced 14 graduates who are all employed in the Academe, Government Agencies and Research Institutions. He envisions that in the years to come, CLSU through ERDT program will be a producer of world class MS and PhD graduates in Engineering. Furthermore, Rene recognizes the role of ERDT as "technology generator". Moreover, CLSU, being one of the consortium universities of the ERDT Program, has brought an added prestige to the university. With generous budget to support the program, it will certainly contribute to the university's income.

Andresa Allera, Ph.D.
Project Leader University of San Carlos

Nicanor S. Buenconsejo, Jr., Ph.D.
Program Coordinator University of San Carlos

Arnold R. Elepaño, Ph.D.
Project Leader (2008-present), University of the Philippines Los Baños

Dr. Elepaño is a professor at the College of Engineering and Agro-Industrial Technologies (CEAT) University of the Philippines Los Baños and appointed Dean of College of Engineering and Agro-Industrial Technologies of the University of the Philippines Los Baños in November 2011. He obtained his Post Doctoral Fellowship in Rice Postharvest System Technologies from International Rice Research Institute in January 1994 and his PhD in Mechanical Engineering from Queen's University in Kingston, Ontario Canada in August 1991. He obtained his MS in Energy Engineering in the University of the Philippines in Diliman Quezon City in May 1988 and his BS in Agricultual Engineering, where he graduated cum laude in the University of the Philippines Los Baños in October 1985. In 2010, he was awarded Outstanding Agricultural Engineer by the Professional Regulation Commission and same award for the Maramba Award of Philippine Society of Agricultural Engineers. He was also awarded Outstanding Agricultural Engineer in the field of Renewable Energy Technology and Management by of the Philippines Society of Agricultural Engineers in 2009 and also in the field of Postharvest processing in 2004. He has also written a number of technical papers (published and unpublished) in refereed/non-refereed journals and has presented several oral/poster papers in scientific conferences locally and abroad. He wrote and presented The Philippine Rice Postproduction Consortium Programs, a plenary paper presented at the Annual National Convention of the Philippine Society of Agricultural Engineers in Benguet State University last April 2010. In Beijing, China he presented Development of Agricultural Engineering in the Philippines, a paper presented at the International Seminar on Restructuring and Strengthening Research and Development for Agricultural Engineering and Development of Agricultural Engineering in the Philippines, Proceedings of the International Seminar on Restructuring and Strengthening Research and Development for Agricultural Engineering, Asian and Pacific Center for Agricultural Engineering and Machinery also in Beijing, China last April 2007. He also served as President of the Association of Agricultural Engineering Department Heads of Higher Education Institute in the Philippines in 2010, and member of the Continuing Professional Education Council for Agricultural Engineers of the PRC. He also served in various positions at the Philippine Society of Agricultural Engineers.

ERDT R&D Tracks Heads

ENERGY R&D TRACK

Prof. Miguel T. Escoto, Jr.
ERDT Track Head

Prof. Escoto engages in research and education in solar photo-voltaic power systems, and power electronics for balance of system components. His graduate level teaching and research focuses on solar photo voltaic stand alone applications for lighting, heating, and voltage inverter motor drive systems for water pump applications. He also works on resource assessment studies for both solar insolation and wind. Currently, he is working on a deployment of a small wind turbine with an axial flux permanent magnet generator for water pumping and potable water system for a small barangay community on the island of Luoc, Philippines.

Rizalinda L. De Leon, Ph.D.
ERDT Track Head

Dr. De Leon is the Chair of the Department of Chemical Engineering, UP Diliman and head of the-Fuels, Energy and Thermal Systems Research Laboratory of the Department. Her research interests include catalytic and enzymatic processing of biomass/algae for production of ethanol/biodiesel & other essential chemicals, nanofluids synthesis and characterization, phase change materials (characterization and performance testing), photocatalysis for hydrogen production, modeling and simulation (blood flow, photocatalytic flow reactor, adsorption heat transfer, particle size distribution in CFB, etc.), solar thermal energy applications in chemical engineering.

ENVIRONMENT AND INFRASTRUCTURE R&D TRACK

Alexis P.A. Acacio, Ph.D.
ERDT Track Head

Dr. Acacio is the director of the UP-Institute of Civil Engineering and his areas of expertise include Geotechnical Engineering and Construction Management. He has a doctorate degree in civil engineering from the University of Tokyo and has nearly 3 decades of experience in teaching, research and industry practice. As a professional civil engineer, he is also involved in the design and construction of various civil infrastructure projects. Currently he is the Chairman of the DPWH Multi-Sectoral Governance Coalition which is a stakeholder driven committee involved in maintaining governance and transparency in public infrastructure projects.

Maria Antonia N. Tanchuling, Ph.D.
ERDT Track Head

Dr. Maria Antonia N. Tanchuling is an Associate Professor of the UP Diliman Institute of Civil Engineering and is the current Coordinator of the Environmental Engineering Graduate Program of the College of Engineering. She earned her BS in Civil Engineering and MS in Environmental Engineering degrees from the University of the Philippines Diliman in 1988 and 1998, respectively. In 2005, she graduated from the Tokyo Institute of Technology with a PhD in Civil Engineering, where she worked on developing a column test to determine contaminant transport parameters in clay. She lectures and does researches on Solid Waste Management, Environmental Impact Assessment, Water Quality Management, and Water and Sanitation. As a representative of UP, she holds the position of Regional Coordinator for NCR of the Philippine Association of Tertiary Level Educational Institutions in Environmental Protection and Management (PATLEPAM). She also sits as a Board Member of TAO-Pilipinas, an NGO which assists urban poor communities plan its settlements.

INFORMATION AND COMMUNICATION TECHNOLOGY R&D TRACK

Adrian Roy L. Valdez, Ph.D.
ERDT Track Head

Dr. Adrian Roy L. Valdez, currently an Assistant Professor in Computer Science, graduated with a Ph.D. in Mathematics in UP Diliman specializing in Partial Differential Equations and its Applications. He did his doctorate research in University of Paris, France and took a post-doctorate research in University of Padua, Italy. His research interests include Scientific Computing, Mathematical Modeling and Simulation, and Mathematical and Computational Finance.

Ariel C. Blanco, Ph.D.
ERDT Track Head

Dr. Blanco earned his doctoral degree in Environmental Informatics from the Tokyo Institute of Technology and his Master's degree in Geographic Information Systems from the University of Melbourne. He finished his BS Geodetic Engineering at the University of the Philippines Diliman. Currently, he serves as Chairman of the Department of Geodetic Engineering and Director of the UP Training Center for Applied Geodesy and Photogrammetry. He is the head of the research laboratory called EnviSAGE (Environmental Systems Applications of Geomatics Engineering. His recent researches include salinity intrusion, urban water quality, geospatial analysis of poverty incidence, damage potential mapping and development of decision support systems for coastal environment.

MANUFACTURING AND MACHINERY R&D TRACK

MENANDRO S. BERANA, PH.D.
ERDT Track Head
See Biosketch on page 55.

IRIS ANN G. MARTINEZ, PH.D.
ERDT Track Head

Dr. Martinez is the Chair of the Department of Industrial Engineering and Operations Research UP Diliman and the head of Culture of Manufacturing, Facilities Planning Laboratory of the department. Her research interests include Manufacturing Culture, particularly on Knowledge and Technology Transfer, Engineer Learning, Demand Forecasting, Inventory Management, Supply Chain Management, and Man-Machine Interaction

SEMICONDUCTOR MATERIALS AND ELECTRONICS R&D TRACK

JOEL JOSEPH S. MARCIANO, JR., PH.D.
ERDT Track Head

Dr. Joel Marciano, Jr. is a Professor of Electrical and Electronics Engineering and the Director of the Electrical and Electronics Engineering Institute (EEEI) at the University of the Philippines Diliman, where he holds the Dado and Maria Banatao Institute Professorial Chair in Engineering. He obtained his BS in Electrical Engineering from the University of the Philippines in 1994 and his PhD in Electrical Engineering from the University of New South Wales in Sydney, Australia in 2002. His research interest include signal processing for wireless communications, MIMO, RFID, wireless sensor networks and RF/microwave circuits and has published numerous papers in these areas. He was the UP-Dado Banatao Fellow at the Berkeley Wireless Research Center (BWRC), University of California Berkeley in 2004. He was also a Visiting Associate Researcher at the School of Electrical and Computer Engineering at the University of California San Diego (UCSD). He also currently serves as the Interim Director of the Institute of Information Infrastructure Development (IIID) of the Philippines-California Advanced Research Institutes (PCARI).

LESLIE JOY L. DIAZ, PH.D.
ERDT Track Head

Leslie Joy L. Diaz obtained her Doctor of Engineering degree in Materials Science and Engineering from Tokyo Institute of Technology and her Master of Science degree in Metallurgical Engineering from the University of the Philippines. She is currently the Chairman of the Department of Mining, Metallurgical, and Materials Engineering and the co-Program Coordinator of the Materials Science and Engineering Graduate Programs jointly offered by the College of Engineering and College of Science. As head of the Composite Materials Research Group /Laboratory of UP-DMMME, she also has been engaged in research efforts that utilize indigenous raw materials in developing composite materials for engineering applications. These include the strong abaca fibers for natural fiber reinforced composite for construction and automobile applications, bitter cassava for thermoplastic starch matrix composites for preparation of biodegradable plastics, agricultural by-products such as crab and oyster shells for synthesis of biomaterials, as well as non-metallic minerals like those found in clay to contribute in the advancement of nanotechnology in the country.

APPENDICES

APPENDIX A

List of Graduated ERDT Scholars

with Thesis/Dissertation Titles

Ateneo De Manila University

	NAME OF SCHOLAR	DEGREE	FIELD OF STUDY	YEAR GRADUATED	TITLE OF THESIS/ DISSERTATION
1	Bate, Allan Edgar, Cedro	MS	Computer Science	March 2010	Automatic Detection of Student Off-Task Behavior while Using an Intelligent Tutor for Algebra
2	Tan, Michael Joseph, New	MS	Computer Science	March 2010	Polynomial-Time Solutions to Some Poset Cover Problem Variations
3	Agapito, Jenilyn, Leyesa	MS	Computer Science	March 2011	Towards an Analysis of Novice Programmers' Compilation Behaviors in C++ (2010)
4	Santos, Ma. Kristina, Que	MS	Computer Science	March 2010	Mobilizing Disaster Relief Management Towards a Framework in Location Based Applications (2010)
5	Syson, Michael, Bautista	MS	Computer Science	March 2010	e-IMCI: Advancing Mobility in the Integrated Management of Childhood Illness in Developing Countries (2010)
6	Baterina, Anna Veronica, Chan	MS	Electronics and Communications Engineering	March 2010	Reconfigurable FPGA
7	Fajardo, Jovilyn Therese, Baco	MS	Electronics and Communications Engineering	May 2010	Genetic Algorithms and Applications
8	Abrajano, Gemalyn, Dacillo	MS	Electronics and Communications Engineering	October 2010	Study of Microwave Signal Propagation under Tropical Rain Conditions
9	Ching, Retcher Hans, Ng	MS	Electronics and Communications Engineering	October 2010	Design and Simulation of a Rain Disaster Alarm System
10	Lorenzo, Genevieve Rose, Hizon	MS	Electronics and Communications Engineering	March 2010	Measurement of Urban Indoor Office Particulate Matter and Design of a P.C. Based Optical Scattering Sensor
11	Marimon, Maricris, Cuison	MS	Electronics and Communications Engineering	March 2010	Wireless Network System of Low cost Accelerometers for Ocean Wave Monitoring

12	Peren, Gilbert Zalameda	MS	Electronics and Communications Engineering	March 2010	Development of Aquaculture Technologies: Design and Control Strategy forn LED-based Photobioreactor System
13	Pulma, Federic Karl-Magne, Tan	MS	Electronics and Communications Engineering	March 2010	Various Applications of Low Cost Accelerometers to Sports Training and Rehabilitation
14	Zamora, Jane Louie, Fresco	MS	Electronics and Communications Engineering	November 2009	Rainfall Mapping of Acoustic Power using Cellular Automata
15	Silverio, Angelito A.	MS	Electronics and Communications Engineering	October 2011	A Wideband High CMRR CMOS Instrumentation Amplifier based on Differential Voltage - Current Conveyor for Bio-Impedance Spectroscopy
16	Borja, Martin John H.	MS	Electronics and Communications Engineering	October 2011	Autonomous Aircraft Control
17	Cruz, Jason Paul M.	MS	Electronics and Communications Engineering	October 2011	Mobile Wireless, Systems and Applications
18	Llanto, Kenneth Joachim O.	MS	Electronics and Communications Engineering	October 2011	Performance of NAT64 versus NAT44 in the context of IPv6 Migration
19	Santos, Marc Ericson C.	MS	Electronics and Communications Engineering	October 2011	Frequency Constellation Mapping for Analysis of Cardiac Rhythms
20	Idaño, Oscar Vergil	MS	Electronics and Communications Engineering	March 2012	Low- cost Accelerometers Applications for Telemedicines
21	Bayot, Roy Khristopher	MS	Electronics and Communications Engineering	March 2012	Urban Visibility Measurements during tropical Weather Events using Image Processing
22	Lagazo, Daniel Jeffrey	MS	Electronics and Communications Engineering	March 2012	Low- cost Accelerometers Applications for Telemedicines
23	Salvadora, John Ariel	MS	Computer Science	March 2012	Serious Games Collon Developing the Philippines – Spanish Era as a Role Playing Game Using Flash
24	Trono, Edgar Marko	MS	Electronics and Communications Engineering	March 2012	Design and Performance of an Android-based Real Time Rainfall Monitoring System

25	Alampay, Raphael	MS	Computer Science	March 2012	Automated Multi-Object Tracker With Data Association & Hybrid Particle Filter From Fixed Camera Angle
26	Guerrero, Reynaldo Jr.	MS	Electronics and Communications Engineering	March 2012	Parameter Extraction from the I-V Characteristics of Photovoltaic Devices using Particle Swarm Optimization
27	Guia, Thea Faye	MS	Computer Science	March 2012	Transition between Affective State and Its Relationship to Learner Performance in an Intelligent Tutoring System
28	Patron, Noel	MS	Electronics and Communications Engineering	March 2012	Protocol for Evaluation of a Closed Loop Thermal Printing System.
29	Favila, Chrisandro	MS	Electronics and Communications Engineering	Oct. 2012	Wireless Sensor Network for River Stage Monitoring,Aquaculture, and Lake Resources Management
30	Infante, William	MS	Electronics and Communications Engineering	Oct. 2012	Vehicle and traffic Simulation of Hybrid and pure Electric Vehicles with Dual-source system in the public transport sector

Central Luzon State University

	NAME OF SCHOLAR	DEGREE COMPLETED	FIELD OF STUDY	Year Graduated	TITLE OF THESIS/ DISSERTATION
1	Antolin, Mina M.	MS	Agricultural Engineering	April 2011	Grain Yield and Seed Quality Response of PSB Rc82 Rice (Oryza sativa L.) Variety on Alternate Wetting and Drying Technology
2	Badua, Sylvester A.	MS	Agricultural Engineering	October 2010	Modification and Performance Test of a Power Take Off-Driven Mobile Biomass Shredder
3	Corpuz, Katherine M.	MS	Agricultural Engineering	April 2011	Design, Fabrication and Evaluation of Prototype Solar-Powered Still for Bio-Ethanol Production
4	Dalangin, Nolasco Jr., O.	MS	Agricultural Engineering	November 2012	Evaluation of a Micro Scale Rice Hull-Fed Power Generation System
5	Damian, Guiller B.	MS	Agricultural Engineering	April 2011	Design, Fabrication and Evaluation of Prototype Anaerobic Bioreactor for Biomass Hydrolysis

6	Delos Reyes, Catherine E.	MS	Agricultural Engineering	November 2012	Design, Fabrication, Testing and Evaluation of a Continuous Flow Rice Husk Gasifier for Bakery Oven
7	Fabula, Jonathan V.	MS	Agricultural Engineering	November 2011	Fertilizer and Irrigation Management Techniques for Sweet Corn (Zea mays saccharata) for Bioethanol Production
8	Galam, Jeannie-Rose S.	MS	Agricultural Engineering	November 2011	Fertilizer and Irrigation Management Techniques for Sweet Sorghum [Sorghum bicolor(L) Meonchl] for Bioethanol Production
9	Imatong, Herbert C.	MS	Agricultural Engineering	April 2012	Performance Evaluation of a Retrofitted Fortified bio-Organic Fertilizer Pelleting Machine
10	Ines, Ricson L.	Ph.D.	Agricultural Engineering	November 2012	Soil Erosion Modeling for a Microwatershed
11	Niro, John Fitzken Da Vinci M.	MS	Agricultural Engineering	Summer 2012	Evaluation of a Modified Coconut Husk Decorticating Machine
12	Rodriguez, Fatima S.	MS	Agricultural Engineering	November 2012	Evaluation of Quick Covering Machine for Grain Drying Pavement
13	Salvador, Mary Jane T.	MS	Agricultural Engineering	November 2011	Yield Response Model of Selected Biofuel Crops to Irrigation
14	Simon, Samuel R.	Ph.D.	Agricultural Engineering	November 2012	Development of a Model on the Fate and Transport of Pesticide in an Irrigated Rice Area

De La Salle University

	NAME OF SCHOLAR	DEGREE	FIELD OF STUDY	YEAR GRADUATED	TITLE OF THESIS/ DISSERTATION
1	Mercado, Jericho Victor L.	MS	Chemical Engineering	February 2010	Biodegradation of a and b-endosulfan in Soil By a Fungal Soil Isolate
2	de Jesus, Erwin A.	MS	Chemical Engineering	June 2010	A Modification of the Universal Quasi-Chemical Model for Correlation for Vapor-Liquid Equilibrium Data

3	Shieh, Louie C.	MS	Chemical Engineering	June 2010	The Effect of Catalyst Preparation on the Catalytic Activity of Ni/ MgO-ZrO2 for Methane Dry Reforming
4	Ngo, Al Benjamin T.	MS	Industrial Engineering	October 2009	A System Dynamics Approach to Enhance the Performance of Emergency Disaster Relief Operations
5	Sio, Dhesirey Beryl K.	MS	Industrial Engineering	October 2009	Modeling the Impact of Kanban System Design to Cycle Time, WIP and Throughput in High Volume Fabrication System
6	Tan, Martha Lauren L.	MS	Industrial Engineering	February 2010	A Data Development Analysis Model with Resource Reallocation Decisions and Production Output Prediction
7	Fernandez, Emil Adrian V.	MS	Industrial Engineering	October 2010	Dynamics of Product and Process Innovation- A system Dynamics Perspective
8	Felix, Nathaniel Isidore B.	MS	Industrial Engineering	June 2011	Design of an Energy-based Model for Economic and Environmental Sustainability of Energy Supply Chains
9	Tee, Tarin Janelle C.	MS	Industrial Engineering	June 2011	A Multi-objective Reverse Logistics Model for Recovery Options of E-waste Considering Uncertain Supply and Integration of the Formal and Informal Waste Sector
10	Sy, Armyn C.	MS	Manufacturing Engineering and Management	October 2010	Development of a control Algorithm for Robotic Rehabilitation Devices using Co-Activation Principle
11	Mariquit, Eden G.	MS	Environmental Engineering	February 2010	Study of the Catalytic Activities of Activated Carbon-Supported Catalysts and Manganese Oxide Catalysts for Complete Oxidation of Xylene
12	Bohol Perlie F.	MS	Civil Engineering	October 2010	Assessment of Reinforcement Corrosion in Fully Carbonated Concrete Through Half Cell
13	Abad, Alexander C.	MS	Electronics & Communications Engineering	June 2011	A 0.35um Low Voltage ADC Using Delta-Sigma Modulator with CIC Decimation Filter
14	Marquez, Richard N.	MS	Electronics & Communications Engineering	February 2011	Development of Speech-activated Servo Motor Controller in FPGA

15	Cabiles, Christine Anne V.	MS	Industrial Engineering	June 2011	A Pricing-Production Model for a Company Implementing Kanban Control Manufacturing System Principles Stochastic Demand
16	Conejos, Joy Rochelle V.	MS	Chemical Engineering	October 2011	Optimization of the Transesterification Process for Biodiesel Production from Coconut Oil using Conventional and Microwave-Assisted Heating
17	Palero, Marie Loren Y.	MS	Chemical Engineering	February 2012	Optimization of Process Parameters of Methane TCD in a Fluidized Bed Reactor Using Ni-Cu/A1203 Catalyst
18	Pulutan, Maria Katrina A.	MS	Chemical Engineering	February 2012	Effect of Pre-treatment in ITDI Coconut shell-based Activated Carbon for Arsenic Absorption
19	Belmonte, Beatriz A.	MS	Chemical Engineering	February 2012	Optimization of Photocatalytic Degradation of Lignin in Water Matrix using Immobilized Nano TiO2 Catalyst by RSM
20	Lopez, Neil Stephen A.	MS	Mechanical Engineering	February 2012	CFD Modeling, Fabrication, and Evaluation of a Small-Scale Natural Convection Solar Dryer for Microalgae Biofuel Production
21	Cantor, Victor John M.	MS	Industrial Engineering	February 2012	Development of a Service Recovery Decision Support Model: Matching Service Failures & Recovery Options
22	Barilea, Ivan Dale U.	MS	Chemical Engineering	February 2012	A Bi-Level Multi-Feedstock Multi Period Optimization Model for Bioenergy Supply Chains
23	Tañala, Francis Narvin A.	MS	Chemical Engineering	February 2012	The Effect of Surface Modification of Coconut Shell-Based Activated Carbon on Methomyl Absorption
24	Jao, Julie Ann L.	MS	Civil Engineering	June 2012	Strength and Permeability Characteristic of Road Base Materials Blended with Fly Ash and Bottom Ash
25	Dychangco, Lydia Francisca T.	MS	Civil Engineering	June 2012	Blending of Processed Lime Materials for Use in Sub-grade, Sub-base and Base Construction
26	Lee, Carlo Luis N.	MS	Chemical Engineering	June 2012	Continuous Transesterification of Jatropha Oil Via Microwave Irradiation

27	Lim, Edrick Dan P.	MS	Civil Engineering	June 2012	Influence of Seawater Mixing on Reinforced Mortars with the Comparison of Varying Fly Ash, Replacement Ration, Water Binders Ration, Curing Conditions and Type of Steel Bars
28	Rustia, Maria Dominique B.	MS	Industrial Engineering	June 2012	The Measurement of the Cognitive Work Ability of Nurses
29	Sy, Franz Adrian L.	MS	Chemical Engineering	June 2012	The Effect of Ni:Cu Ratio on the Catalytic Activity of Ni-Cu/AC Catalysts for the Thermocatalytic Decomposition of Methane
30	Hilado, Samantha Denise F.	MS	Mechanical Engineering	June 2012	Vison Based Pedestrian Detection Using Motion and Boosted Histogram of Oriented Gradients
31	Kang, Jimmie Neil C.	MS	Chemical Engineering	June 2012	Production of Bioethanol Through Cofermentation of Rice Straw Hydrolysates by Saccharomyces Cerevisiae and Pachysolen Tannophilus
32	Geslani, Janina Marie A.	MS	Manufacturing Engineering and Management	June 2012	Rapid Prototyping Methodology of a Non-Assembly Robotic Structure with a Shape Memory Alloy (SMA) Actuator
33	Dela Cruz, Jennifer C.	PhD	Electronics and Communications Engineering	October 2012	Heuristic Approach in Modeling Radio Path Loss Inside Residences for Fixed & Portable Digital Terrestrial Television at 677 MHZ
34	Dizon, Clarissa S.	MS	Chemical Engineering	October 2012	Optimization of Coco-Biodiesel Production Through Conventional and Microwave Heating and Phase Equilibria Analysis of the Transesterified Coconut Oil Using UNIFAC-LLE Model
35	Chen, Harwin Maynard C.	MS	Industrial Engineering	October 2012	Tactical Risk Mitigation Strategies in a Global Supply Chain with Continuous Risk
36	Orillo, John William F.	MS	Electronics & Communications Engineering	October 2012	Noise Robust Automatic Speech Recognition System Through Spectral Subtraction Implemented on FPGA
37	Magtoto, Joseph M.	MS	Electronics & Communications Engineering	October 2012	Geographic Routing for VANET in Real Highway and City Scenarios
38	Bea, Aaron Ferdinand D.	MS	Mechanical Engineering	October 2012	Automated Bulk Cartoning of Folded Sachet Linked Strips Using Constrained Gravity Stacking

39	Agustin, Chrissette C.	MS	Manufacturing Engineering and Management	October 2012	Comprehensive Gait Data Acquisition System
40	Yu, Sherie C.	MS	Computer Science	October 2012	Inferencing Over Common-Sense Knowledge for Story Generation
41	Ang, Karen S.	MS	Computer Science	October 2012	Enhancing Event-Based Semantics in the Ontology of Picture Book 2
42	Bernardo, Gian Paolo O.	MS	Chemical Engineering	February 2013	CNT Production through the Thermal Catalytic Decomposition of Methane over Ni-Cu/Al2O3
43	Bartolome, Leo S.	MS	Electronics & Communications Engineering	February 2013	Artificial Neural Network Implementation of MMDA's Vehicle Tagging Scheme to Public Utility Buses in the City in Improving Violations Apprehension Rate
44	See, Alvin Arthur A.	MS	Manufacturing Engineering and Management	February 2013	Detection of floating impurities in filled Beverage Bottles using Digital Image Processing Techniques
45	Ochotorena, Carlo Noel E.	MS	Electronics & Communications Engineering	February 2013	Image Fusion of Multidirectional Wavelet Transform for Image Denoising

Mapua Institute of Technology

	NAME OF SCHOLAR	DEGREE	FIELD OF STUDY	YEAR GRADUATED	TITLE OF THESIS/ DISSERTATION
1	Caole, Geraldine H.	MS	Environmental Engineering	2nd Quarter 09-10/ January 2010	Simultaneous Nitrification and Denitrification using Biofilm in an Intermittently-Aerated Sequencing Batch Reactor
2	Cunanan, Armi M.	MS	Environmental Engineering	4th Quarter 09-10/ July 2010	Photolytic Reduction of Hexavalent Chromium using Titanium Dioxide Combined with Hydrogen Peroxide
3	Medina, Ruji P.	MS	Environmental Engineering	4th Quarter 09-10/ July 2010	Oxidative Degradation of Reactive RED 141 by Electro-Fenton Process: Optimization by Response Surface Methodology

4	Puno, Arvin Brian N.	MS	Environmental Engineering	4th Quarter 09-10/ July 2010	Photocatalytic Degradation of Petroleum Hydrocarbon-Contaminated water Using Titanium Dioxide
5	Aguas, Dante B.	MS	Environmental Engineering	1st Quarter 10-11/ October 2010	Degradation of Dieldrin in wastewater by TiO2 Photocatalysis
6	Manuel, Mark Christian E.	MS	Environmental Engineering	2nd Quarter 10-11/ February 2011	Determination of Chiller Performance Model from In-Situ Chiller Data
7	De Leon, Voltaire B.	MS	ECE Major in Control Systems	2nd Quarter 10-11/ February 2011	MCU-Based Aquaculture System
8	Marcelino, Kaizer Merz C.	MS	EE Major in Power Systems	4th Quarter 10-11/ August 18, 2011	Optimal Sizing and Siting of Distributed Generation in PENELCO Using Genetic Algorithm
9	Rogelio, Jayson P.	MS	ECE Major in Microelectron-ics	4th Quarter 10-11/ August 18, 2011	Wind-Solar Renewable Energy Sources with Wireless Data Acquisition and Logging System Using Zigbee
10	Bongay, Darius Jay R.	MS	Environmental Engineering	1st Quarter 11-12	Electrokinetic Treatment of Copper-Contaminated soil
11	Jover, Angelie I.	MS	Environmental Engineering	2nd Quarter 11-12	Absorption Capability of Gmelina Arborea Bark Using Crystal Violet
12	Mendoza, Rodolfo P.	MS	Civil Eng'g. major in Structural Engineering	2nd Quarter 11-12	Investigation on The Influence of CHB Walls in The Seismic Performance of Low- Rise RC Frames Using The Equivalent Strut Theory and SAP 2000
13	Nograles, Abdul Haddi H.	MS	ECE Major in Control Systems	3rd Quarter 11-12	Wireless System for Pregnancy Detection in Cows by Monitoring Tempera-ture Changes in the Body
14	Griño, Albert C.	MS	Construction Engineering	3rd Quarter 11-12	Investigation of Vapor Transmission and Thermal Insulation Capability of Recycled Plastic Aluminates (RPA) Impregnated with Organoclay as Potential Construction Material.
15	Escandor, Erika Jheza D. G.	MS	ECE Major in Microelectron-ics	4th Quarter 11-12	Die Crack Phenomenon Analysis for Single Chip Radio Frequency (RF) Transceiver Device

16	Balinado, Favis Joseph C.	MS	ECE Major in Control Systems	1st Quarter 12-13	Regenerative Brake System for a Fuzzy Logic Controlled Electric Machine Driven Wheel
17	Mirto, Mitchelle Anthony A.	MS	Materials Science and Engineering	2nd Quarter 12-13	Phenomenal Study on the Effect of Thermal Treatment Stability of Shipping Materials for Small Outline Integrated Circuit

Mindanao State University–Iligan Institute of Technology

	NAME OF SCHOLAR	DEGREE	FIELD OF STUDY	YEAR GRADUATED	TITLE OF THESIS/ DISSERTATION
1	Cabachete, Arabella A.	MS	Civil Engineering	April 2009	Ferrocement for Pressurized Tank Application
2	Hernandez, Noel M.	MS	Mechanical Engineering	October 2010	Modification of Spark Ignition Conventional Engine into a Biogas-Driven Engine for Power Generation
3	Viña, R ommel R.	MS	Mechanical Engineering	October 2010	Performance Evaluation of Copper-Water Thermosyphons in Glazed Box Solar Water Healer
4	Jabian, Marven E.	MS	Electrical Engineering	April 2011	Performance Evaluation of a Micro-Grid Consisting of Wind and Solar Power Plant
5	Salaan, Carl John O.	MS	Electrical Engineering	April 2011	An Artificial Neural Network Based Real-Time Reactive Power Controller
6	Caporado, Rosemarie A.	MS	Civil Engineering	October 2011	Ferrocement and Coco Coir-Polysterene Cement Board Sanwdich Panel
7	Quiatchon, Glory Fe T.	MS	Civil Engineering	April 2012	Effects of thickness of Bamboo Reinforcement in the flexural strength of Bamboo reinforced Concrete
8	Vegafria, Ma. Cristina P.	MS	Material Science Engineering	April 2012	Development of an LPG Sensor using CBD-Synthesizes ZnO thin Films on Pt-Coated Glass Substrates

9	Villame, Michael S.	MS	Mechanical Engineering	April 2012	Bubbling Fluidized Bed Gasification on Rice Hull: An Alternative to Power Generation
10	Jabile, Liezl M.	MS	Material Science Engineering	November 2012	Red Clay-Based Porous Ceramic for Water Aeration Diffuser Applications
11	Naval, Christopher T.	MS	Mechanical Engineering	November 2012	Design and Analysis of a Digital 6-Component Aerodynamic Load Measuring and Data acquisition System for Wind Tunnel Testing
12	Obnimaga, Rey Denzil P.	MS	Civil Engineering	November 2012	Evaluation of Pandan Leaf Reinforced Concrete Board as an Alternative Construction Material
13	Villanueva, Mary Grace B.	MS	Material Science Engineering	November 2012	Fabrication of Red Clay-Based Ceramic Microchannel Using Microwave-Induced Slip Casting

University of the Philippines-Diliman

	NAME OF SCHOLAR	DEGREE	FIELD OF STUDY	YEAR GRADUATED	TITLE OF THESIS/ DISSERTATION
1	Briza, Antonio Cacapit	MS	Computer Science	March 2008	An application of multi-objective particle swarm optimization to end-of-day Historical Stock Trading
2	Jayme, Jennifer M.	MS	Electrical Engineering	October 2008	Analysis of Different AMBA-Based Bus Interconnection Schemes for ARM7 Multicore Environment
3	Mariano, Ana Francia V.	MS	Environmental Engineering	October 2008	Adsorption of Copper (Cu2+) Ions from Aqueous Solution by Non-Crosslinked and Crosslinked Chitosan-Coated Bentonite Beads
4	Unisa, Amadea Paula Q.	MS	Electrical Engineering	October 2008	Real-Time Implementation of Low Bit-rate Wideband Speech coders on ADSP-21065L
5	Ang, Federico M.	MS	Electrical Engineering	March 2009	Joint source- Channel coding for packet Network Transmission of Low Bit rate Wide band Speech C

6	Bilaro, Virgil B.	MS	Environmental Engineering	March 2009	Effect of Temperature, Permeate Type and Bacterial Degradation on the Permeability of a Proposed Landfill Liner from Recycled Laminated Plastic Materials
7	Fuertes, Dale A.	MS	Environmental Engineering	March 2009	Remediation Potential of Compost and Vermicast
8	Ramos, Franz Furby C.	MS	Environmental Engineering	March 2009	Determination of the Physical and Mechanical Properties of Recycled Low-Density Polyethylene and Biomass Composites for Use as Microbial Support Media for Biological Treatment of Wastewater
9	Ubando, Aristotle T.	MS	Mechanical Engineering	March 2009	Computational Fluid Dynamics Analysis of Savonius Wind Turbine with Varying Twist Angles
10	Bacero, Riches S.	MS	Civil Engineering	Summer 2009	Assessment of jeepney in terms of Ergonomics, Safety and Environmental Factors for the Development of Standards and Specifications.
11	Canseco, Roy Vincent L.	MS	Electrical Engineering	Summer 2009	Modeling of Overcurrent Protective Relay Response Time to Electrical Transients in Power Systems
12	Devanadera, Ma. Catriona E.	MS	Environmental Engineering	Summer 2009	Performance Evaluation of Aerobic Moving Bed Biofilm Reactor and Aerobic Attached Film Reactor Using Solid Wastes as Microbial Support for the Treatment of Simulated Water.
13	Hernandez, Nestine Hope S.	MS	Computer Science	Summer 2009	On The Topological Properties of Generalized Hypercubes
14	Meneses, Serafin Farley III M.	MS	Remote Sensing	Summer 2009	Gravimetric Geoid Determination in Metro Manila by Using Terrestrial and Satellite-Derived Data
15	Tria, Lew Andrew R.	MS	Electrical Engineering	Summer 2009	Photovoltaic Array Reconfiguration of Maximum Power Transfer.
16	Encinas, Catherine S.	MS	Industrial Engineering	October 2009	Application of multiple criteria decision making to solar energy Technologies in the Philippines
17	Jaramilla, Melchor E.	MS	Mechanical Engineering	October 2009	Performance and Emissions of Gasoline Engine in Different Blends of Ethanol biofuels

18	Mayuga, Gian Paolo T.	MS	Electrical Engineering	October 2009	A Study of the Design Methodologies of RF CMOS Mixers for LowIF Receivers
19	Mena, Marie Stephanie S.	MS	Metallurgical Engineering	October 2009	Electrochemical Migration of Silver under temperature- Humidity- Bias Stressing- Conditions
20	Polinga, Lady Marriane E.	MS	Materials Science and Engineering	October 2009	Formation and Properties of Abaca/Polyester Composite
21	Romano, Michelle S.	MS	Materials Science and Engineering	October 2009	Inhibition of Copper Corrosion in Domestic Water Applications
22	Samaniego, Jessie O.	MS	Environmental Engineering	October 2009	Reduction of Heavy Metal and Microbial Contamination in Septage via Vermicomposting
23	Tan, Wilson M.	MS	Electrical Engineering	October 2009	Assymmetric Clustering of Microarchitectures through Dynamic-Selective Shutdown and Sharing of Functional Units
24	De Jesus, Neon S.	MS	Electrical Engineering	March 2010	Correcting the Direction of Arrival (DoA) Estimates of Passive UHF RFID Tag Signals by Carrier Leakage Cancellation using LMS Adaptive Filtering
25	Abeto, Paul Eric G.	MS	Industrial Engineering	March 2010	Developing a Monitoring and Control Model for Assessing Environmental And Economic Performance of Small Scale Gold Mining Production Systems in the Philippines
26	Belaro, Ivy Rose D.	MS	Metallurgical Engineering	March 2010	Effect of Sparger Pore Size and Frother Concentration on Bubble Size and Stability
27	Mercader, Shalom Brian	MS	Environmental Engineering	March 2010	The Design and Evaluation of an Ozone Contractor-Reactor for Color and Organic Matter Removal in Distillery Waste Water
28	Razon, Abigail R.	MS	Computer Science	March 2010	A New Approach to Automated Essay Content Analysis using Concept Indexing
29	Reyes, Prince Elmer C.	MS	Chemical Engineering	March 2010	Evaluation of the Performance of Diesel Additive from the Pyrolysis Oil of Waste Foamed Polystyrene and Used Motor Oil

30	Sarcaoga, Ronald L.	MS	Computer Science	March 2010	Performance Benchmarking of New Software Stream Ciphers for Secured Multimedia Streaming in Resource-Constrained Devices
31	Sarmiento, Czar Jakiri S.	MS	Remote Sensing	March 2010	Remote Sensing and Geographic Information Systems for Inflow Estimation in Reservoir Operations
32	Selga, Cyrus Angelo A.	MS	Industrial Engineering	March 2010	A New Optimization Model for Brachytherapy treatment Planning
33	Verzosa, Loureal Camille O.	MS	Remote Sensing	March 2010	Remote Sensing, Geographic Information Systems, and Shannon's Entropy: Measuring Urban Sprawl in a Mountainous Environment
34	Villame, Deogracias P.	MS	Electrical Engineering	March 2010	Carrier Suppression Locked Loop Mechanism for UHF RFID Readers
35	Aguila, Rupert Karlo D.	MS	Mechanical Engineering	Summer 2010	CME Performance and Emission Characteristics using Common Rail Direct Injection (CRDI) Engine
36	Austero, Sheila Baco	MS	Environmental Engineering	Summer 2010	Degradation of Reactive Blue 19 Using Electrochemical Peroxidation Process: Application of a 23 Full Factorial Design
37	De Guzman, Mark P.	PhD	Civil Engineering	Summer 2010	Development of a knowledge-Based Expert System for Intersection Improvement
38	Flores, Roy R.	MS	Electrical Engineering	October 2010	Implementation of a Multiple Beamformer for coarse Localization of Passive UHF RFID Tags
39	Cordel, Macario II O.	MS	Electrical Engineering	October 2010	Development of a Parameter-Based Voice Device (VED) for Adaptive Multi Rate Wideband (AMRWB) Codec
40	Miguel, R oland Jay A.	MS	Electrical Engineering	October 2010	QCM-ISA Monoclonal Antibody Multi-Serotype Dengue Immunosensor
41	Pagba, Cecilia B.	MS	Remote Sensing	October 2010	Solar Energy Assessment using Moderate Resolution and GIS-Based Suitability Analysis in the Philippines

42	Parcon, Michelle Rose Rafael	MS	Environmental Engineering	October 2010	Competitive Sorption of Lead and Copper in Aqueous Solution on Coco Peat
43	Almazan, Sherwin Paul M.	MS	Electrical Engineering	March 2011	GM-C Low-Pass Filter Design For Wimax Applications in a 90nm CMOS Process
44	Alunan, Lendl Israel M.	MS	Electrical Engineering	March 2011	System Level Analog Architectural Design for WiMax Direct Conversion Receivers in 90 CMOS
45	Badilla, Daisy B.	PhD	Environmental Engineering	March 2011	Influence of Water Content on Biofiltration Performance
46	Cortes, Micah Jane O.	MS	Metallurgical Engineering	March 2011	The Role of Surface Charges in the Recovery of Fine Mineral Particles Using Enhanced Gravity Concentration
47	Gambe, Arnie E.	MS	Energy Engineering	March 2011	Evaluation of the Effects of Particle Size, Duration of Treatment and Spore Concentration on Rice Straw Delignification Using P.Chrysosporium Bunds
48	Hipolito, Miguel Carlo A.	MS	Chemical Engineering	March 2011	Effects of Agitation Rate and Microbial Cellulose Geometry on the Adsorption of S. Cerevisiae onto Microbial Cellulose
49	Lorenzo, Michael Angelo A.	MS	Electrical Engineering	March 2011	Comparison of Integrated LNA-Mixer Topologies for WiMax Applications in a Standard 90nm CMOS Process
50	Ramos, Ma, Sheila K.	PhD	Environmental Engineering	March 2011	The Potential of Ordinary Composting and Vermicomposting Bacterial Isolates in Reducing the Harmful Bloom of Microcycstis Aeruginosa
51	Reynoso, Ryan L.	MS	Energy Engineering	March 2011	Efficiency of Oil Extraction from Chlorella Vulgaris by Ultrasonification
52	Viguilla, Jose Carlo M.	MS	Metallurgical Engineering	March 2011	Biofiltration Technology for Philippine Gold
53	Zarsuela, Jestoni V.	MS	Electrical Engineering	March 2011	A Study of Cache Sub-Banking and Block Buffering as Power Reduction Techniques for Multiprocessor Cache Design

54	Blanco, Mae Sincere S.	MS	Computer Science	Summer 2011	Access Control for Video-based Collaborative Learning Frameworks
55	Briones, Rowena M.	MS	Environmental Engineering	Summer 2011	Oxidation of Acetaminophen by Fluidized-bed Fenton Process: Optimization and Kinetic Study
56	Dela Cruz, Michael Leo L.	MS	Materials Science and Engineering	Summer 2011	Adsorption Mechanism of Arsenic on Iron Modified Montmorillonite and Montmorillonite Supported Zero-valent Iron
57	Espinosa, Kurt Junshean P.	MS	Computer Science	Summer 2011	ICT Intergration Framework and Implementation Model in Basic Education
58	Fojas, Jhalique Jane R.	MS	Chemical Engineering	Summer 2011	Carotid Artery Modeling Using the Navier-Stokes Equations for an Incompressible, Newtonian and Axisymmetric Flow
59	Galvan, Rommel N.	MS	Chemical Engineering	Summer 2011	Capric and Lauric Acid Aster Derivatives as PCM for Low Temperature Energy Storage
60	Germar, Fernando J.	PhD	Civil Engineering	Summer 2011	Nonlinear Static Analysis of Concrete Bearing-Wall Type Low-Rise Single-Family Dwelling Structures
61	Macababbad, Reigna Ritz Jewel M.	MS	Civil Engineering	Summer 2011	Development of a Probe Car System to Analyze Road Traffic Conditions
62	Mallare, Ivy Joy G.	MS	Computer Science	Summer 2011	A Task-role Based Access Control with Multi-constraints on a Medical Workflow System
63	Reguyal, Febelyn T.	MS	Chemical Engineering	Summer 2011	Ultrasonic Irradiation Combined with Hydraulic Cleaning of Fouled Pes and PVDF Membranes
64	Salang, Jorge Juan J.	MS	Environmental Engineering	Summer 2011	Electro-Fenton Degradation of Reactive Yellow 145
65	Veciana, Mersabel L.	MS	Environmental Engineering	Summer 2011	Acetaminophen Degradation by Electro-Fenton and Photoelectro-Fenton Process Using a Double-Cathode Electrochemical Cell
66	Araño, Khryslyn G.	MS	Materials Science and Engineering	October 2011	Electrospinning of Polycarprolactone Mat with Highly Adsorbing Nanoparticlaes

67	Ang, Ma. Rosario Concepcion O.	MS	Remote Sensing	October 2011	Remote Sensing, Geographic Information System and Artificial Neural Network Approach in Rainfall Estimation; The Case of Cagayan River Basin, Philippines
68	Ansay, Rafael Lean D.	MS	Computer Science	October 2011	Congestion Control and Fast Retransmission Policies for Transport Layer Multihoming in WirelessEnvironments
69	Buño, Kelvin C.	MS	Computer Science	October 2011	Grammars, Automata, and Distributed P Systems
70	Castillo, Gaudan Albert Chekov L.	MS	Electrical Engineering	October 2011	H∞ Filter-based Online Battery State -of-Charge Estimator for Pure Electric Vehicles
71	Fuertes, Dale A.	PhD	Environmental Engineering	October 2011	Transport, Speciation, and Interfacial Reactions of Dimethylarsinic Acid in Sand and Sandy Loam Soils under Variably Saturated Conditions
72	Ong, Darrel Alvin N.	MS	Computer Science	October 2011	Automated Content Scoring of Filipino Essays using Concept Indexing
73	Perez, Jem Valerie D.	MS	Chemical Engineering	October 2011	Treatment of Quick-Service Restaurant Wastewater by Electrocoagulation: Effects of Current Density, Electrolysis Time, and Charge Loading on Pollutant Removal and Energy Consumption
74	Roque, Jonas Fabian G.	MS	Computer Science	October 2011	Secure Mobile Medical Record System for Tuberculosis Using Public Key Infrastructure and Slective Encryption of Medical Images (suMMeRS)
75	Toelntino, Ian Christopher M.	MS	Electrical Engineering	October 2011	Self-Powered GPS Tracking System for Vehicle and Asset Monitoring
76	Abundo, Michael Lochinvar S.	PhD	Electrical Engineering	March 2012	Integrated Tidal Resource Investigation, Device, and Energy Tool (Trident) for Multi-Site, Multi-Device Evaluation of Tidal In-Stream Energy
77	Agripa, Michelle L.	MS	Environmental Engineering	March 2012	Removal of Oxidized Sulphur Compounds from Model Diesel Fuel Using Commercial and Novel Adsorbents
78	Arcega, Aries A.	MS	Chemical Engineering	March 2012	Ultrasound Assisted Oxidative Desulfurization of Organosulfur Compounds Using Ferrative (VI) from Sludge

79	Cabarle, Francis George C.	MS	Computer Science	March 2012	Spiking Neural P Systems: implementations and Applications
80	Caloza, David L.	PhD	Energy Engineering	March 2012	A Transient 3D Finite Element Solutions to Transport of E. Coli in Subsurface
81	Caranguian, Luther Paul R.	MS	Electrical Engineering	March 2012	Device Interoperability and Authentication for Telemedical Applicance based on the ISO/IEEE 11073 Personal Health Device (PHD) Standards
82	Clemente, Jhoirene B.	MS	Computer Science	March 2012	Finding Planted (l,d)-Motifs in Parallel Using Random Projection on GPUS
83	Del Mundo, Lersan B.	MS	Computer Science	March 2012	Enhanced WLAN Fingerprinting System Using Hybrid Classifier Approach
84	Espiritu, Danilyn DC.	MS	Environmental Engineering	March 2012	Evaluation of Cocopeat as a Substrate Material of a Subsurface Constructed Wetland for Rehabilitation of Marilao-Meycauayan-Obando River System
85	Espiritu, Eileen Ross L.	MS	Metallurgical Engineering	March 2012	Experimental and Theoretical Kinetics of Heterocoagulation of Nickle Laterite Ore by Total Potential Energy Evaluation
86	Estomata, Mari Trix L.	MS	Remote Sensing	March 2012	Extraction of Benthic Cover Information from Video Tows and Photographs Using Object-Based Image Analysis
87	Figueroa, Kathleen Gay M.	MS	Computer Science	March 2012	An Efficient and Fine-Grained Access Control Framework for Semi-Trusted Storage
88	Juayong, Richelle Ann B.	MS	Computer Science	March 2012	Computing in Evolution-Communication P Systems with Energy
89	Madriaga, Lawrence V.	PhD	Materials Science and Engineering	March 2012	Cure and Heat Transfer Kinetics of MMT-Filled Nanocomposite
90	Navarro, Bryan B.	MS	Electrical Engineering	March 2012	Network Reconfiguration and Load Balancing of Unbalanced Three Phase System for Reduction of System Loss

91	Paras, Fernando Jr. O.	PhD	Energy Engineering	March 2012	Development of SinAg: A Solar Assisted Egg Incubation System
92	Parazo, Jerico A.	MS	Mechanical Engineering	March 2012	Numerical and Statistical Analysis of the Sagittal Curves of the Human Spine
93	Tanguilan, Glaiza	MS	Energy Engineering	March 2012	Thermal Conductivity of Aluminum Oxide Nanoparticles in an Aqueous [HMIM]LS Solution Using Transient Hot-Wire Method
94	Diamante, Junierose C.	MS	Materials Science and Engineering	Summer 2012	Electrical Conductivity of Lithium Montmorrillonite (LiMMT)-Filled Polymer Clay Nanocomposites (PCNs)
95	Amatong, Edgar C.	MS	Environmental Engineering	Summer 2012	Anaerobic BatchCo-Digestion of Food Waste, Septage, and Waste Cooking Oil: Effect of Oil Fraction on Methane Stabilization
96	Balbarona, Juvy Antonio	MS	Mechanical Engineering	Summer 2012	Experimental and Numerical Aerodynamic Analysis of a Low-Powered Car
97	Bermido, Edward T.	MS	Mechanical Engineering	Summer 2012	Ejector Design for Powerplant Application
98	Borbo, Junel B.	MS	Chemical Engineering	Summer 2012	Optimization and Kinetic Studies on the Simulaneous Decolorization of Reactive Blue 19 and Reactive Yellow 145 By Putsan (TIWI) Clay
99	Daep, Ryan Cedric O.	MS	Metallurgical Engineering	Summer 2012	Reliability and Intermetallic Characterization of Palldium-Clad Copper Wire Bond on Aluminum Pad Under Mixed Stresses
100	Doliente, Stephen	MS	Energy Engineering	Summer 2012	Nanofluid Stability and Physical Properties of Aluminum Oxide Nanoparticles in Aqueous Solutions of [HMIM]LS
101	Espiritu, Christian Adam L.	MS	Chemical Engineering	Summer 2012	Performance of a DOST Flocculating Yeast Fusant in Sequential Batch Ethanol Fermentation of Molasses
102	Lingating, Reuben Dasay Jr. P.	MS	Environmental Engineering	Summer 2012	Anaerobic Co-digestion of Septage and Food Waste: Simple Batch and Two-Phase Reactor Systems

103	Sayo, Rachelle Anne Velasco	MS	Metallurgical Engineering	Summer 2012	Study on the Effect of Frothers on the Zeta Potential of Bubbles
104	Tallod, Rolly A.	MS	Environmental Engineering	Summer 2012	Calibrating H2S Strip Test against Multiple Tube Fermentation Technique Using Turbidity at Incubation Temperatures of 8°C, 18°C and 25°C
105	Tapas, Marie Joshua T.	MS	Materials Science and Engineering	Summer 2012	Electrocatalytic Properties of Electrodeposited Black Ruthenium of Gold-Coated Silver for Hydrogen Production via Water Electrolysis
106	Aguinaldo, Gyro T.	MS	Environmental Engineering	October 2012	Emulsification of Heavy Fuel Oil to Improve Steam Generation and Reduce Stack Emission in Oil-Fired Steam Boiler
107	Alonzo, Maria Roussel C.	MS	Environmental Engineering	October 2012	Anaerobic Co-digestion of Food Waste and Water Activated Sludge at Varying Feed Ration
108	Amer, Kristine Marfe S.	MS	Environmental Engineering	October 2012	Modified TIO2 Photocatalyst with Visible Light Activity for the Treatment of Acetaminophen-Containing Wastewater
109	Cleofas, Dolores SD.	PhD	Civil Engineering	Summer 2012	Numerical Simulation of Saltwater Intrusion in Panglao Island, Bohol
110	Ilao, Joel P.	PhD	Electrical Engineering	Summer 2012	Corpus-Based Analysis of Tagalog/Pilipino/Filipino-Written Text
111	Patacsil, Liza B.	PhD	Environmental Engineering	Summer 2012	Biological Removal of 17B-Estradiol (E2) and 17A-Ethinylestradiol (EE2) in a Submerged Membrane Bioreactor Using Nitrifier-enriched Inoculum
112	Villavert, Ricardo T.	PhD	Environmental Engineering	Summer 2012	Modeling and Optimization of a Two-Stage Limestone Contractor: An Application to Carbon Capture
113	Biel, Luisa Cyd Charisse B.	PhD	Environmental Engineering	October 2012	Oxidative Desulfurization of Fuel Using Quarternary Phosphonium Salt as Phase Transfer Agent and Chitosan Immobilized onto Bentonite as Bioadsorbent
114	Borines, Myra G.	PhD	Chemical Engineering	October 2012	Bioethanol Production from Philippine Sargassum SP

115	Corpuz, Ryan D.	MS	Materials Science and Engineering	October 2012	Electrophoretic Classification of Clay Mineral in Dilute Aqueous Solution
116	Delos Reyes, Rodelma B.	MS	Environmental Engineering	October 2012	Anaerobic Co-Digestion of Food Waste and Septage in batch Mode: Effect of Mixture Composition on Biogas Production and Waste Treatment Performance
117	Futalan, Cybelle Concepcion	PhD	Environmental Engineering	October 2012	Static & Dynamic Studied of the Removal of Pb,Cu,Ni, Using Chitosan Coated Bentonite
118	Garcia, Jan Aaron Augustus F.	MS	Energy Engineering	October 2012	A Technical and Economic Assessment of Grod-Connected Solar Photo-voltaic in the Philippines
119	Marcos, John Mark A,	MS	Environmental Engineering	October 2012	Modeling Nitrate Contamination of Groundwater in Irrigated Lands
120	Quevedo, Gene Paul L.	MS	Electrical Engineering	October 2012	Evaluating the Effects of Peer Localization on a Bit Torrent-Based P2P Video-on-Demand Network
121	Reaño, Johanna Marie P.	MS	Environmental Engineering	October 2012	Industrial Wastewater Coagulation Using Ferrate Derived from Waste Iron Slduge
122	Revilla, Josefa Angelie Dilla	MS	Industrial Engineering	October 2012	Comparative Study on Performance between Oprators with Work Discon-tinuity and Without Work Doscontinuity
123	Tamondong, Ayin M.	MS	Remote Sensing	October 2012	Mapping of Seagrass and other Benthic Habitats in Bolinao, Pangasinan Using Worldview-2 Multispectral Satellite Image
124	Zuñiga, Anna Veronica O.	MS	Environmental Engineering	October 2012	Biosorptive Removal of Pb(II) from Acqueous Solution by Dried Water Hyacinth (Eichhornia Crassipes) Roots
125	Montalbo, Kathrina D.	MS	Energy Engineering	March 2013	Transesterification of Jatropha Seed Oil Using Potassium Loaded on Different Forms of Zeolite Y as Catalyst
126	Ordoño, Emma E.	PhD	Chemical Engineering	March 2013	Development and Optimization of Sequential Combination of Anaerobic-aerobic and Ozonation Processes for Treating Effluents from Distellery

127	Tolosa, Nolan C.	PhD	Environmental Engineering	March 2013	Photocatalytic Behaviour of Doped-Titanium Dioxide on the Oxidation of Chlorophenols Contaminated Water under Visible Light

University of the Philippines-Los Baños

	NAME OF SCHOLAR	DEGREE	FIELD OF STUDY	YEAR GRADUATED	TITLE OF THESIS/ DISSERTATION
1	De Vela, Roger Jay L.	MS	Agricultural Engineering	May 2011	Drying and Color Kinetics of Decorticated Queen Pineapple (Ananas comosus L. Merr.) Fiber Bleached with Hydrogen Peroxide Solution
2	Onal, Mark Keylord S.	MS	Agricultural Engineering	May 2011	Design and Development of a Jeepney-mounted Micro WECS for Battery Charging Applications in Naujan, Oriental Mindoro, Philippines
3	Lualhati, Ryan Anthony O.	MS	Agricultural Engineering	October 2011	Design and Development of a Small-Scale Wine Carbonator
4	Catubig, Joan Cecilia M.	MS	Agricultural Engineering	October 2011	Design of a Low Head Micro Hydro Electric Generating System
5	Sanchez, Paolo Rommel P.	MS	Agricultural Engineering	October 2011	Development of a Fluidyne Water Pump for Irrigation
6	Durante, Ron Lester S.	MS	Agricultural Engineering	October 2011	Evaluation of Selected Wick Materials for Passive Capillary Hydroponics System
7	Dulawan, Loinaz D.	MS	Agricultural Engineering	October 2011	Development of a Turbine for Low Head Micro Hydroelectric Power Systems
8	Alucilja, Renel M.	MS	Agricultural Engineering	October 2012	Development of a Village Level Oil Palm Digester
9	San Juan, Elisa R.	MS	Agricultural Engineering	October 2012	Design Modification and Optimization of Low Head Microhydro System for Electricity Generation

10	Villota, Elmar M.	MS	Agricultural Engineering	April 2012	Respiration Modelling of Philippine Carabao Mango (Mangifera indica L.)

University of San Carlos

	NAME OF SCHOLAR	DEGREE	FIELD OF STUDY	YEAR GRADUATED	TITLE OF THESIS/ DISSERTATION
1	Añora, Mark Lloyd M.	ME	Mechanical Engineering	March 2010	Extraction of Bio Oil and Pyrolysis Gas from marine Flora: A Possible Alternative Energy Source
2	Esgana, Felixberto Jr. S.	ME	Mechanical Engineering	March 2011	Design Fabrication and Testing of a Pyrolysis Reactor for Marine Florae
3	Anub, Mary Jesany B.	ME	Computer Engineering	March 2010	An Interactive Platform Supporting Peer-to-Peer Live Video Streaming for Synchronous Distance Education
4	Lim, Jency B.	MS	Civil Engineering	March 2010	Application of Linear Genetic Programming in Flood Stage Forecasting
5	Mayo, Francis L.	ME	Industrial Engineering	March 2010	An Assessment on the Passenger Seat Dimensions of Talamban-bound Public Utility Jeepneys through Anthropometric Data of USC College Students: Basis for Design Improvement
6	Ybañez, Lorraine I.	MS	Chemical Engineering	March 2010	Effec t of Process Conditions on the (Trans)esterification of Moringa Oleifera Oil Using Immobilized Candida Antartica Lipase B (CALB)
7	Chua, Rodolfo A. Jr.	ME	Civil Engineering	October 2011	The Nanoscale Creep Mechanism of Cement-based Materials using Molecular Dynamics Simulations
8	Ocampo, Landon A.	ME	Industrial Engineering	October 2011	Development of Statistical-based Intercropping Optimization Model for Siquijor Island, Philippines
9	Chan, Richard Jess L.	ME	Mechanical Engineering	October 2011	Development of a Condenser for the Developed Marine Florae Pyrolysis Reactor

10	Astillo, Philip Virgil B.	ME	Computer Engineering	October 2011	Computer Vision and Image Segmentation Implemented on GPU Using Compute Unified Device Architecture as Applied on Quality Inspection of Pre-Etched Printed Circuit Board
11	Arellano, John Philip Virgil	ME	Mechanical Engineering	October 2012	Design, Fabrication and Testing of a Conical Solar Chimney
12	Contento, Josehp Karl P.	ME	Mechanical Engineering	March 2012	Design, Fabrication and Testing of a Marine
13	Geraldino, Gromyko Jr. T.	ME	Mechanical Engineering	October 2012	Modeling and Evaluation of a Room Under
14	Malonjao, Ray H.	ME	Mechanical Engineering	October 2012	Design of A One Ton Pineapple Solid Waste
15	Maslog, Joel M.	ME	Electronics and Engineering	March 2012	High Voltage Tolerant-Rail ESD Protectioin
16	Mayormita, Joseph T.	ME	Mechanical Engineering	October 2012	Development of A Desiccant Modular Roof for Passive Control of Humidity in Residential Houses
17	Varela, Richard Jayson	ME	Mechanical Engineering	October 2012	Design and Simulation of a Double-Skin Roof Module for Day and Nightime Natural Ventilation
18	Kho, Kristine	ME	Computer Engineering	October 2012	Development and Integration of a GraphicalUser Interface Framework with an Open-Source Content Management System for an Academic Community

APPENDIX B

List of PhD Sandwich Scholars

	Name of Scholar	Program	Overseas Adviser	University	Topic/ Discipline of Study
1	Badilla, Daisy B.	PhD in Environmental Engineering	Dr. Peter Gostomski	University of Canterbury, Christchurch, New Zealand	Air Pollution Control
2	Ramos, Maria Sheila K.	PhD in Environmental Engineering	Prof. Kiyohiko Nakasaki, Ph.D	Shizouka University, Japan	Toxic biological water pollution abatement
3	Futalan, Cybelle Concepcion M.	PhD in Environmental Engineering	Dr. Meng-Wei Wan	Chia Nan University of Pharmacy and Science, Taiwan	Batch and Continuos Column Studies of Chitosan-Coated Kaolinite and Chitosan-Coated
4	Tolosa, Nolan C.	PhD in Environmental Engineering	Prof. Ming-Chun Lu	Chia Nan University of Pharmacy and Science, Taiwan	Photocatalytic behaviour of the modified titanium dioxide on the oxidation of 2,4 - dichlorophenol water under visible light
5	Germar, Fernando J.	PhD in Civil Engineering	Prof. Yoshiaki Nakano	University of Tokyo, Japan	Non-linear Static Analysis of Concrete Bearing-Wall Type, Low Rise Single-Family Dwelling Structures
6	Fuertes, Dale A.	PhD in Environmental Engineering	Dr. Nguyen Phuoc Dan	Ho Chin Minh University of Technology, Vietnam	Transport, Speciation, and Interfacial Reactions of Organoarsenic in Topsoil and Subsoil
7	Biel, Luisa Cyd Charisse B.	PhD in Environmental Engineering	Prof. Ming Chun Lu	Chia Nan University of Pharmacy and Science, Taiwan	Ultrasound-Assisted Oxidative Desulfurization od Diesel Fuel with Ionic Liquid as Catalytic Solvent
8	Patacsil, Liza B.	PhD in Environmental Engineering	Dr. Jiangyong Hu	Ho Chin Minh University of Technology, Singapore	Biological Removal of E2 & EE2 in Submerged Membrane Bioreactor using Nitrifiers - enriched Inoculum
9	Borines, Myra G.	PhD in Chemical Engineering	Dr. Joel Cuello	The University of Arizona, USA	Bioethanol Production from Philippine Sargassum sp.

10	Abundo, Michael Lochinvar S.	PhD in Electrical Engineering	Prof. Seri Lee	Nanyang Technical University, Singapore	Rapid Evaluation of Sites for Tidal In-stream Energy: Resource Assessment, Technology and Device Matching, and Power Output Estimation
11	De Leon, Marlene M.	PhD in Computer Science	Dr. Shengdong Zhao	National University of Singapore	Towards a Requirements Engineering CASE Tool Framework for Interactive Spaces Using Zoomable Object-Oriented Information Landscape Paradigm
12	Yap, Jan Michael C.	PhD in Computer Science	Dr. Xinguang Zhu	Chinese Academy of Sciences, China	Systems Approach to Building a Gene Network Model for Salinity Stress Response in Rice
13	Emmanuel L. Ferrer	PhD in Chemical Engineering	Dr. Santiago G. Espallargas	Delfth University of Technology, The Netherlands	Zeolites as Carriers of Corrosion Inhibitors for Anticorrosive Organic Coatings
14	Bernadeth S. Antonio	PhD in Chemical Engineering	Dr. Ali Abbas	University of Sydney, Australia	Biotransformation of Biodiesel-derived Crude Glycerol to Fumaric Acid Using a Filamentous
15	Ma. Catriona E. Devanadera	PhD in Environmental Engineering	Dr. Felicity Roddick	RMIT University, Australia	Membrane Fouling and its Mitigation in Microfiltration and Ultrafiltration Systems Used for Algal Removal
16	Yvonne Ligaya F. Musico	PhD in Environmental Engineering	Dr. Debora Frigi Rodrigues	University of Houston, USA	Application of Novel PVK-GO Membrane Filter for Removal of Pathogenic Bacteria
17	Mary Ann T. Pandan	PhD in Environmental Engineering	Dr. Vincenzo Naddeo	University of Salerno, Italy	River Health Assessment Using Dynamic Olfactometry and Volatile Compound Profiles of Phytoplankton
18	Moriel L. Prado	PhD in Environmental Engineering	Dr. Vincenzo Naddeo	University of Salerno, Italy	Assessing the Impact of Ozonation-Sonolysis Pretreatment on the Performance of a Nanofiltration Membrane Bioreactor to Remove Diclofenac, Carbamazepine and Sulfamethoxazole
19	Ruji P. Medina	PhD in Environmental Engineering	Dr. Debora Frigi Rodrigues	University of Houston, USA	NOM Rejection by Nanofiltration Using Graphene-Surface-Modified Nanofilter

APPENDIX C
List of Faculty Development Scholars

	Name of Faculty	University	Topic/ Discipline of Study
1	Orillaza, Jordan Rel C.	University of Canterbury, Christchurch, New Zealand	Electrical Engineering (Power Systems)
2	Pedrasa, Jhoanna Rhodette I.	University of New South Wales, Sydney, Australia	Computer Networks
3	Pedrasa, Michael Angelo A.	University of New South Wales, Sydney, Australia	Power Systems
4	Lorenzo, Lowell L.	Case Western Reserve University, Ohio USA	Operations Research
5	Muñoz , Jose C.	Chung Yuan Christian University, Taiwan	Chemical Engineering
6	Hizon, John Richard E.	Imperial College London, UK	Circuits and Systems
7	Galiza, Ronald John S.	University of Queensland, Australia	Transportation/Traffic Engineeering
8	Ang, Sheila Mae C.	University College of London, UK	Proton exchange membrane
9	Rosales, Marc D.	University of Paris - Est Marne-la-Vallee, France	Compact-circuit modeling and circuit design with SiGe Heterojunction bipolar Phototransistors (HPTs) for Ultra-Wide-Band Radio-over-Fiber Applications
10	Tiglao, Nestor Michael C.	Universidade Técnica de Lisboa, Portugal	Wireless Sensor Networks
11	Alarcon, Louis P.	University of California, USA	Intergrated Circuits
12	Batista-Navarro, Riza Theresa	University of Manchester, UK	Biomedical Text Mining
13	Danao, Louis Angelo M.	The University of Sheffield, UK	Turbo Machining specific to energy production.
14	De Leon, Franz A.	University of Southampton, UK	Digital Signal Processing (DSP)
15	De Leon, Ma. Theresa G.	University of Southampton, UK	Micro-Electro-Mechanical Systems (MEMS)
16	Raquel, Carlo R.	University of Birmingham, UK	Evolutionary Computation and Machine Learning
17	Romano, Mark S.	University of Wollongong, New South Wales, Australia	Electro Materials for Thermal- Energy Havesting.
18	Jalao, Eugene Rex L.	Arizona State University, USA	Industrial Engineering and Information Systems
19	Tamayao, Mili-Ann M.	Carnegie Mellon University, Pennsylvania	Engineering and Public Policy
20	Mancenido, Michelle V.	Arizona State University, USA	Industrial Statistics Track
21	Resurreccion, Joanna Z.	George Washington University, USA	Systems Engineering
22	Co, Paul Jason R.	Tokyo Institute of Technology, Japan	Telecommunications
23	Ocon, Joey D.	Gwangju Institute of Science and Technology, Soth Korea	Electrochemical Engineering / Materials Engineering

24	Remolona, Miguel Francisco M.	Columbia University, USA	Chemical Engineering
25	Talampas, Marc Caesar R.	Nanyang Technological University, Singapore	Electrical and Electronic Engineering
26	Tan, Wilson M.	University of Warwick, UK	High Performance Computing
27	Figueroa, Ligaya Leah L.	University of New South Wales, Sydney, Australia	Geographic Information Systems
28	Razon, Abigail R.	University of Birmingham, UK	Natural Language Processing/ Text Processing
29	Dimal, Matthew Oliver Ralp L.	University of Twente, The Netherlands	Geoinformation Science and Earth Observation (Disaster Management)
30	Alvarez, Anastacia B.	National University of Singapore, Singapore	Electrical and Computer Engineering (IC Design)
31	Espiritu, Richard D.V	Newcastle University, UK	Advanced Materials

APPENDIX D

List of Post-doctoral Fellows

	NAME	DEPT.	HOST PROFESSOR	DURATION	UNIVERSITY
2009					
1	Henry N. Adorna	DCS	George Paun & Mario Perez- Jimenez	9-15-09 to 10-15-09	University of Seville, Spain
2	Prospero C. Naval	DCS	Marco Dorigo	2-22-10 to 2-21-11	Universite Libre de Bruxelles, Belgium
3	Jaime Y. Hernandez Jr.	ICE	Kuang-Yen Liu	4-1-10 to 5-31-10	National University of Taiwan
4	Benito M. Pacheco Jr.	ICE	Rui Pinho	4-1-10 to 5-31-10	Global Earthquake Model Foundation and Rose School, Pavia Italy
5	Augustus Resurreccion	ICE	Per Moldrup	4-1-10 to 5-31-10	Aalborg University, Denmark
6	Eric Augustus J. Tingatinga	ICE	Hideji Kawakami	4-1-10 to 5-31-10	Saitama University

	NAME	DEPT.	HOST PROFESSOR	DURATION	UNIVERSITY
2010					
1	Maria Lourdes P. Dalida	DChE	Rigoberto dvincula	10-15-10 to 01-15-11	University of Houston,Texas
2	Rizalinda De Leon	DChE	Rigoberto dvincula	10-15-10 to 12-15-10	University of Houston, Texas

	NAME	DEPT.	HOST PROFESSOR	DURATION	UNIVERSITY
2012					
1	Vena Pearl A. Bongolan	DCS	Donato D'Ambrosio	11-1-12 to 9-30-13	University of Calabria, Italy
2	Florencio Ballesteros	DChE	Dr. Vincenzo Naddeo	11-5-12 to 3-25-13	University of Salerno

APPENDIX E

List of Visiting Professors

NAME	FROM	TO	SCHOOL AFFILIATED	TOPIC
2008				
Dr. Jose B. Cruz Jr.	Oct. 28, 2008	Dec.16, 2008	The Ohio State University, USA	Dynamic Optimization & Dynamic Game Theory with focus on Energy Applications
Dr. Kunio Ishikawa	Feb. 5, 2009	Feb. 14, 2009	Kyushu University, Fukuoka, Japan	Biomaterials
Dr. David Laurence	Jan. 14, 2009	Jan. 21, 2009	University of New South Wales, Australia	Environmental and Sustainable Mining Practices
Dr. Rigoberto C. Advincula	Dec. 15, 2008	Jan. 10, 2009	University of Houston, USA	Biomaterials, Energy Conversion Devices and Solar Cells
Dr. Alexander Meduna	Jan. 30, 2009	Feb. 28, 2009	Brno University of Technology, Czech Republic	Formal Languages Theory
Dr. Naohisa Okamoto	Feb. 8, 2009	Feb.17, 2009	University of Tsukuba, Japan	Intelligent Transportation Systems & Recreational Transportation Planning
Dr. Kuniaki Sasaki	Feb. 26, 2009	Mar. 11, 2009	University of Yamanashi, Japan	Cost Effectiveness of Travel survey for Urban Transportation Planning & Evaluation of Infrastructure Based on the Individual Behavior and Attitude
Dr. Fiorello B. Abenes	Jan. 12, 2009	Jan. 28, 2009	California Polytechnic State University, USA	Renewable energy technology, focusing on biomass ethanol production out of biomass wastes like rice straw; bagasse from corn, sugar cane and sorghum; as well as biodegradable municipal wates that are mixed with carabao rumen fluid.
Dr. Ken Kawamoto	Jan.19, 2009	Jan.25, 2009	Saitama University, Japan	Soil Environment
Dr. Toshiko Komatsu	Jan. 19, 2009	Jan.25, 2009	Graduate Sschool of Science and Engineering of Saitama University	Soil Environment

NAME	FROM	TO	SCHOOL AFFILIATED	TOPIC
2009				
Dr. Dejan Markovic	March 17, 2009	Mar.24, 2009	University of California, Los Angeles	Microelectronics
Matthew Bristow MS	April 14, 2009	May 19, 2009		Technology Entrepreneurship

Dr. Patrice Boursier	June 01, 2009	Aug. 31, 2009	University of La Rochelle, France	Advanced Databases and Content Based Image Retrieval
Dr. Tetsuo Yai	July 26, 2009	Oct. 10, 2009	Tokyo Institute of Technology, Japan	Highway & Railway Network Planning, Airport Planning & Aviation Policy Analysis, Air Traffic Control & Management, Bike Transport and Space Allocation Study, Intelligent Transportation System (ITS), Theory of Planning Process & Public Involvement in TRansportation.
Dr. Ian W. Douglas	Aug. 22, 2009	Sep. 20, 2009	Florida State University, USA	Human Factors Engineering & Knowlegde Management
Dr.Aliakbar Akbarzadeh		Sep. 12, 2009	RMIT University, Melbourne,Australia	Heat Recovery Technology, Solar-Wind Hybrid Technology &Renewable Energy
Dr. Yoshikazu Miyanaga	Sept. 9, 2009	Sep. 15, 2009	Hokkaido University, Japan	Voice Data Processing & Radio Communication Relation
Dr. Supavadee Aramvith	Sept. 9, 2009	Sep. 15, 2009	Chulalongkorn University, Thailand	Computer Vision Techniques in Surveillance Applications, Digital Video Coding & Processing, Transmissions of Digital Video over Wireless & IP Networks, Image/Video Retrieval Techniques and Applications in Multimedia Communication System
Dr. Joel L. Cuello	July 18, 2009	Aug. 01, 2009	University of Arizona	Biosystems Engineering focused on the application of engineering to cell/tissue/whole-organism cultures and their environments to achieve sustainable production of biomass, biofuels or biochemicals.
Dr. Jun Chen	Sept. 6, 2009	Sep. 12, 2009	University of Wollongong, Australia	1. Synthesis and Characterization of Carbon Nanotube based 3D Architectures2. Fuel Cell Applications including Cell Design and Catalytic Electrodes3. Preparation of Nanostructured Electromaterials4. Electrocatalysts and their application in electrochemical and Bionic Devices5. Energy Storage and Energy Conversion
Dr. Shang-Tian Yang	Sep. 2, 2009	Sep. 2, 2009	Ohio State University	Design of bioreactors, ultrafiltration and biobutanol
Ralph Werner Lante BS	Nov. 11, 2009	Nov. 24, 2009	Aereal Photography and Topographic Unit, Northern Territory, Government, Australia	Digital Photogrammetry
Dr. Eric Brewer	Jan. 3, 2010	Jan. 12, 2010	University of California Berkeley	Development of low-cost and robust computer
Dr. David Ian Bishop	Feb. 13, 2010	Feb. 27, 2010	University of Melbourne	Spatial Visualization, Spatial Databases, and Scripting and Programming in GIS
Dr. Chang-Ho Park	Feb.1, 2010	May 31, 2010	Kyung Hee University	Development of Bioengineering in Graduate Program, Biochemical Engineering and Conceptualization of research projects on Biochemicals

Dr. Nina Ossanna	Feb. 17, 2010	Feb. 24, 2010	University of Arizona	Embedding Technology Development within the research institution
Dr. Joel L. Cuello	Feb. 17, 2010	Feb. 24, 2010	University of Arizona	Engineering Education in the 21st Century : Toward an Innovation Driven and Sustainability-Centered Engineering Design
Dr. Gavriel Salvendy	Feb. 18, 2010	Feb. 24, 2010	Tsing-Hua University	Human Factors Engineering & Knowlegde Management
Dr. Mustafizur Rahman	Feb. 18, 2010	Feb. 24, 2010	National University of Singapore	1. Design and Development of New Machine Tools for Micto Machining 2. Ultra-precision Nano Machining 3. Bio-machining 4. Managing small Machine.
Dr. Shin-ya Nishizaki	Aug. 26, 2010	Sept. 09, 2010	Tokyo Institute of Technology, Japan	1. Logic Programming 2. Symbolic Computation 3. Computer Security 4. Distributed Systems
Dr. Ryan Shaun Joazeiro de Baker	Apr. 04, 2010	Apr.11, 2010	Worcester Polytechnic Institute	1.Data mining of user interaction logs and user observations 2. Multidimentional Analysis of User-Machine Interactions Towards the Development of Models of Effect (ERDT Project; a discussion with propronent)

NAME	FROM	TO	SCHOOL AFFILIATED	TOPIC
2010				
Matthew Bristow MS	Apr. 12, 2010	May 19, 2010		Technology Entrepreneurship
Dr. Aliakbar Akbarzadeh	Sept. 4, 2010	Sept. 11, 2010	RMIT University, Melbourne,Australia	Heat Recovery Technology, Solar-Wind Hybrid Technology &Renewable Energy
Dr. Jan Rabaey	Sept. 5, 2010	Sept. 12, 2010	Unicersity of California- Berkeley	Signal processing and design automation
Dr. Ryan Shaun Baker	Feb. 27, 2011	Mar. 06, 2011	Worcester Polytechnic Institute	1.Data mining of user interaction logs and user observations. 2. Multidimentional Analysis of User-Machine Interactions Towards the Development of Models of Effect (ERDT Project; a discussion with propronent)
Dr. Joseph Beck	Feb. 27, 2012	Mar. 07, 2011	Worcester Polytechnic Institute	Intelligent Tutoring Systems, user modeling, and artificial intelligent in education communities, educational data mining, computer application,
Dr. Arthur Graesser	Feb. 27, 2011	Mar. 08, 2011	University of Memphis	cognitive science, discourse processing, and learning sciences
Dr. Christian G'Sell	Feb. 7, 2011	Mar. 5, 2011	Institut National Polytechnique de Lorraine, Ecole Nationale Superieure de la Metallugie et de l'Industrie Miniere in Nancy, France	mechanical testing of solid glassy amorphous and pollycrystalline polymers, and plastic deformation of solid materials

Dr. Faithi Habashi	March 06, 2011	Mar. 13, 2011	Laval University in Quebec City, Canada	extractive metallurgy
Dr. Aruna Prasad Senevi-ratne	Feb. 21, 2011	Feb.25, 2011	University of New South Wales	mobile computing systems, networking research, and research commercializa-tion
Dr. Eryk Dutkiewicz	April 07, 2011	April 20, 2011	Macquarie University Sydney Australia	Wireless Communication and Networks
Dr. Jong Soo Jeong	Feb. 17, 2011	Mar. 01, 2011	Waseda University	Characteristic Analysis of Thermal System
Dr. Kiyoshi Saito	Feb. 17, 2011	Mar. 01, 2011	Waseda University	Refrigeration and Air-conditioning

NAME	FROM	TO	SCHOOL AFFILIATED	TOPIC
2011				
Dr. Robert King	Nov. 26, 2011	Dec. 2, 2011	Massachussetts Institute of Technology	Global Positioning System Processing
Dr. Giuseppe Cavallaro	Sept. 12, 2011	Sept. 18, 2011	Nanyang Technical University	workshop on ocean renewable energy
Dr. Alex Waibel	Sept. 14, 2011	Sept. 17, 2011	Carnegie Mellon University	English Language Proficiency Training

NAME	FROM	TO	SCHOOL AFFILIATED	TOPIC
2012				
Dr. Taesik Kim	Jan. 11, 2012	Jan. 20, 2012	Keimyung University, South Korea	Artificial Intelligence and Game Design
Dr. Ken Nagasaka	Feb. 5, 2012	Feb. 12, 2012	University of Agriculture and Technology, Japan	Signal processing and design automa-tion
Dr. Joseph Beck	May 23, 2012	May 31, 2012	Worcester Polytechnic Institute	Thrashing: Fairlure of Student to learn Material in a timely manner & WEBsistments : Integrating procedural practice and web-based content
Dr. Jeffrey Rimer	Aug. 5, 2012	Aug.12, 2012	University of Houston	Crystal Engineering
Dr. Paul Berger	Nov. 14, 2012	Nov. 21, 2012	Ohio State University	Organic Photovoltaics
Dr. Masato Saito	Aug. 22, 2012	Aug. 29, 2012	Saitama University	Foundations and Earthquake Engineer-ing
Dr. Gary Yen	Nov. 12, 2012	Nov. 21, 2012	Oklahoma State University	Computational Intelligenece applica-tions
Dr. Takashi Oguchi	Nov. 25, 2012	Dec. 02, 2012	University of Tokyo	Traffic Engineering
Dr. Yousif Ali Hussin	Nov. 18, 2012	Nov. 25, 2012	University of Twente ITC	Environmental RS and GIS to improve circular offerings. Advanced applica-tion of Geomatics to forrerst studies

APPENDIX F

List of Visiting Researchers

NAME	DEPT./INST	HOST PROFESSOR	DURATION	TITLE OF RESEARCH
2008				
Vena Pearl Bongolan	DCS	Jaime D.L. Caro	10/27/08-10/27/09	Research at the Computing Laboratory

NAME	DEPT./INST	HOST PROFESSOR	DURATION	TITLE OF RESEARCH
2009				
Amador Muriel	DChE	Analiza P. Rollon	10/01/09-09/30/10	Resolving an Old Paradoc on Coherent Turbulence, The Flow of Stucture of the Crab Nebula, Quantum Turbulenceat Room Temperature, Turbulent Pois-seuile Flow,Modification of Turbulent Law of the Wall, & Toy Models of Bloods Circulation
Patrice Boursier	DCS	Jaime D.L. Caro	02/24/10-02/25/11	Geographic Information Systems, Advance Databases, and Content Based Image Retrieva Systems

APPENDIX G

List of Faculty Research Dissemination Grantees

2008				
EEEI				
Rowena Cristina Guevara	July 05-11, 2008	Real-Time Implementation of Wideband Sinusoidal Speech Coder on ADSP-21065L	16th International Conference on Digital Signal Processing (DSP 2009)	Santorini, Greece
2009				
EEEI				
Rowel Atienza	November 16-18, 2009	Interactive Electronic Reader to Enhance Public School Education	International Conference on Education, Research and Innovation (ICERI 2009)	Madrid, Spain
Anastacia P. Alvarez	December 18-19, 2009	Asynchronous Implementation of a 32-bit DLX Microprocessor	International Conference on Semi-Conductor Technology (ICSCT)	Jeju Island, South Korea
Manuel C. Ramos	November 22-28, 2009	Bipedal Robot Locomotion Using Multivariable Control	IEEE Region 10 Conference Tencon 2009 in Suntech Singapore International Convention & Exhibition Centre Conference on Semi-Conductor Technology (ICSCT)	Singapore
Maria Theresa Gusad	August 23-27, 2009	Design and Implementation Operational Amplifiers with Programmable Characteristics in a 90nm CMOS Process	19th European Conference on Circuit Theory and Design	Antalya, Turkey
Miguel Escoto Jr.	November 23-26, 2009	Photovoltaic Array Reconfiguration for Maximum Power Transfer	Tencon 2009, Suntec Singapore International Convention	Exhibition Center, Singapore
Roel M. Ocampo	November 23-26, 2009	Implementation and Evaluation of a DCCP Module for Network Simulation 2	TENCON 2009 Conference	Singapore
Romarie Lorenzo	November 16-18, 2009	FPGA Implementation of a Space-Time Trellis Decoder	Student Conference on Research and Development (SCORED) 2009, Universiti Putra Malaysia (UPM)	SerdangSengalor,
Tyrone W. Tai	November 13-15, 2009	Interactive Electronic Reader to Support English Education	International Conference on Education and Management Technology (ICEMT) / IEEE-International Conference on Computer Technology and Development (ICCTD) 2009	Kota Kinabalu, Malaysia

DIEOR				
Virginia J. Soriano	October 20-22, 2009	Enhanced Balanced Scorecard: A Proposed Sustainability Planning Platform	International Conference on Systems Engineering and Engineering Management 2009 (ICSEEM)	San Francisco, California
DGE				
Enrico C. Paringit	October 17-20, 2009	Research and Development in Support of the Implementation of the Philippine Reference System of 1992: Results and Recommendations	7th International Federation of Surveyors (FIG) Regional Conference	Hanoi, Vietnam
ICE				
Ma. Antonia Tanchuling	November, 11-22, 2009	Removal of Lead Ions from Solution Using Cocopeat as Sorbent Material	Pacific Basin Consortium Conference	Perth, Australia
2010				
ICE				
Eric Cruz	August 8-12, 2010	Design and Implementation of Rehabilitation Works for a Mangrove Protected Coast-A Pilot Project in Central Philippines (WC 0491) and Prediction, Analysis, and Accounting for Coastal Hazards in the Planning and Siting of Mining Port Infrastructures (WC 0582)	5th Civil Engineering Conference in the ASIAN Region (CESAR5) and Australasian Engineering Conference 2010	Sydney, Australia
Augustus Resurreccion	October 31, 2010	A Soil-Water Repellence Model That Integrates Easily Measurable Soil Physical Parameters	The 2010 International Annual Meetings of the American Society of America, and Soil Science Society	Long Beach, California, USA
Maria Antonia Tanchuling	November 30, 2010	Competitive Sorption of Copper and Lead in Cocopeat	The 1st International Conference and Exploratory Workshop on Soil Architecture and Physico-Chemical Functions	Denmark
Jaime Y. Hernandez	November 29, 2010 - December , 2010	Development of Low-cost Sensor System for Monitoring Damage to Structures Due to Disastrous Earthquakes in Developing Countries	3rd Asia Conference on Earthquake Engineering (ACEE 2010)	Bangkok, Thailand
Guillermo Tabios III	November 30, - December 1, 2010	Flood Risk Management in the Philippines	International Flood Risk Management Approaches: From Theory to Practice Governmental Policy-Oriented Discussions	Park Hyatt Hotel, Washington DC
Eric Augustus Tingatinga	February 25-26, 2010	Earthquake Disaster Mitigation Using Innovative Retrofitting Method	Regional Conference on Geo-Disaster mitigation in ASEAN	Bali, Indonesia
Eric Augustus Tingatinga	August 30 - September 3, 2010	Gravity Effects on Earthquake Response of Shear-Flexural Building	Regional Conference on Geo-Disaster mitigation in ASEAN	Ohrid, Macedonia
Eric Cruz	February 25-26, 2010	Estimation of Seismically-Induced Potential Tsunami penetration into Coastal Terrains	Regional Conference on Geo-Disaster mitigation in ASEAN	Bali, Indonesia

Ma. Antonia Tanchuling	February 25-26, 2010	Estimating the Dispersion and Retardation Factors of Lead, Chromium and Iron in Coco-peat Using a Non-equilibrium Sorption Model	Regional Conference on Geo-Disaster mitigation in ASEAN	Bali, Indonesia
Benito Pacheco	February 25-26, 2010	Multi-Hazard, Multi-Sector, Multi-Discipline Approach to Disaster Risk Management: Examples in the Philippines	Regional Conference on Geo-Disaster mitigation in ASEAN	Bali, Indonesia
Augustus Resurreccion	February 25-26, 2010	Evaluation of the Efficiency of the Subsurface Constructed Wetland Using HYDRUS-2D: A Numerical Simulation of Water, Heat and Multiple Solutes in a Variably Saturated Media	Regional Conference on Geo-Disaster mitigation in ASEAN	Bali, Indonesia
DChE				
Maria Lourdes P. Dalida	March 24-27, 2010	CO2 Production at Different Matric potentials in Biofiltration	2010 Asian-Pacific Regional Conference on Practical Environmental Technologies	ubonRatchathani, Thailand
Analiza P. Rollon	July 12-16, 2010	Ozonation of Papermill Wastewater: Enhancing Biodegradability and Process Efficiency	5th International Conference on Environmental Science and Technology	Houston, Texas, USA
Wilfredo Jose	October 17-19, 2010	Developing a Continuing Engineering Education Seminar for Engineering Educators	The 12th World Conference on Continuing Engineering Education in Singapore	Singapore
Maria Lourdes P. Dalida	October 5-8, 2010	Comparative Removal of Nitrate in a Recirculated System Using Zero-ValentNanoscale Iron and Copper-Iron Bimetal with Co2 Bubbling	The 13th Asia-Pacific Confederation of Chemical Engineering Congress (APCChE 2010)	Taipei, Taiwan
Cyril Jose E. Bahamundi	October 5-8, 2010	Properties of Alumina Supported Fe^(3+)-TiO_2 Photocatalyst Prepared by Mechanical Engineering Coating Technique	13th Asia Pacific Confederation of Chemical Engineering Congress	Taipei, Taiwan
Maurice Sorolla II	November 22-23, 2010	Synthesis and Characterization of Cu-Ti-SBA 15 for the Photocatalytic Degradation of Paraquat	17th Regional Symposium on Chemical Engineering (RSCE 2010)	Bangkok, Thailand
Rizalinda L. De Leon	November 22-23, 2010	Coconut Oil-Stearic Acid Mixtures as Potential Phase Change Material for Cooling Load Reduction	Regional Symposium in Chemical Engineering (RSCE) 2010	Bangkok, Thailand
DCS				
Cedric Angelo Festin	August 11-13, 2010		3rd International Conference e on Human-centric Computing (HumanCom-10)	Cebu City, Philippines
Abigail Razon	December 6-9, 2010	Automated Essay Content Analysis using concept Indexing with Fuzzy- C Means	2010 Asia Pacific Conference on Circuits and Systems	
EEEI				
Joy Alinda Reyes	March 25-26, 2010	Simulation of Standard Benchmarks in Hardware Implementations of L2 Cache Models in Verilog HDL	12th International Conference on Computer Modelling and Simulation Simulation (UK Sim 2010)	Cambridge University, England

Joel Joseph Marciano Jr.	April 18-21, 2010	Combining Parallel Sequence Spread Spectrum (PSSS) with OFDM-Concept and Simulation Results	IEE Wireless Communications and Networking Conference (IEE WCNC)	Sydney, Australia
Rowel Atienza	June 22-24, 2010	Implementation of Digital Game-Based Learning Environment	2nd International Conference on Education Technology and Computer (ICET)	Shanghai, People's Republic of China
Marc Caesar Talampas	November 21-24, 2010	Design, Development, and Evaluation of a Simple Wireless Sensor Network for Indoor Microclimate Monitoring	TENCON 2010	Fukuoka, Japan
	December 6-9,2010	A Conductivity and Temperature Sensor Array for Detecting Saltwater Intrusion in Shore-based Communities	2010 IEEE Asia Pacific Conference on Circuits and Systems	Hilton & Le Meridien, Kuala Lumpur, Malaysia
Allan Nerves	October 27-29, 2010	Supply Cost Minimization for Distribution Systems with Multi-cost Multi-point Supply through Network Reconfiguration and Risk Assessment of Energy Trading for a Generation Company with Bilateral Contracts	9th International Power and Energy Conference	Singapore
Anastacia B. Alvarez	September 21-24, 2010	Design and Implementation of Passive RF-DC Converters for RF Power Harvesting Systems and Comparative Study of Low-Leakage SRAM Structures Using 90nm CMOS Technology"	IEEE Region 10 Conference (TENCON 10)	Fukuoka, Japan
Joel Joseph Marciano	November 21-24, 2010	FPGA Implementation of a Time Domain Replectometry (TOR) System for Slope Monitoring Applications	IEEE Region 10 Conference (TENCON 10)	Fukuoka, Japan
Joy Alinda Reyes-Madamba	November 21-24, 2010	High-Level Implementation of the Five-Stage Pipeline ARM9TDM Core	IEEE Region 10 Conference (TENCON 10)	Fukuoka, Japan
RhandleyCajote	October 25-30, 2010	FMO Selection Using markov in H.264 for Slow Fading Wireless Channels	International Symposium on Communications and Information Technologies 2010	Tokyo, Japan
	December 06-11, 2010	Improved FMO -based H.264 Frame Layer Rate Control for Low-Bit Rate Transmission	Picture Coding Symposium 2010	Aichi, Japan
Siegfred D. Balon	December 13-14, 2010	Sectorization of UHF RFID Tags using a Steerable Phased Antenna Array	IEEE Student Conference on Research and Development 2010	Putrajaya, Malaysia
DGE				
Rhodora M. Gonzalez	July 04-07, 2010	Remote Sensing and GIS in Inflow Estimation for Reservoir Operation-Magat, Philippines	ISPRS Commission VII Symposium 2010	Vienna, Austria
Ariel C. Blanco	August 27-30, 2010	Sediment Discharge from an Agricultural Watershed: Investigating the Influence of Land Cover Fragmentation using the GSSHA model	Remote Sensing and Hydrology Symposium 2010	Jackson Hole, Wyoming, USA
DIEOR				
Aura C. Matias	December 14-17, 2010	Characterization of Filipino Driver Behaviour	1st Southeast Asian Network of Ergonomics Societies (SEANES) 2010	Cebu City, Philippines

Iris Ann G. Martinez	December 13-16, 2010	The Iterative Analysis and Synthesis of Technology Components in Multicultural Technology Development	First South East Asian Network of Ergonomics Societies (SEANES)	Cebu City, Philippines
DMMME				
Brian Milo Buenaventura	August 06-10, 2010	Recovery of Fine Gold Particles from the Philippine Gold Deposits by Enhanced Gravity Concentration and Flotation	25th International Mineral Processing Congress	Brisbane, Queensland, Australia
Herman Mendoza	August 06-10, 2010	Kinetic Behaviour of Solid/Solid Separation of Ultrafine Particles in Aqueous Suspension	25th International Mineral Processing Congress	Brisbane, Queensland, Australia
Eduardo R. Magdaluyo	November 14-18, 2010	Characterization of Aminopropyltriethoxysilane- functionalized Polycaprolactone-Montmorillonite Beads for Heavy Metal Bioabsorption	The 3rd International Congress on Ceramics	Osaka, Japan
Richard D.V. Espiritu	November 25-26, 2010	DCS Analysis of Cu-Zn-Sn Shape Memory Alloy Fasbricated by Electroposition of Tin and Brass	1st International Conference on Materials Engineering (ICME) and 3rd AUN/SEED-NET Regional Conference on Materials (RCM)	Yogyakarta, Indonesia
2011				
ICE				
Augustus Resurreccion	October 16-19, 2011	"Relating the Air Permeability of Mayon Sand with its Soil-Water Retention Curve: Measurements and Modeling"	The 2011 Annual Soil Science Society of America (SSSA) Conference	San Antonio, Texas USA
Maria Antonia Tanchuling	October 3-7, 2011	Waste Characterization and Surficial Methane Concentration at Quezon City Controlled Dumping Facility (QCCDF)	The 13th International Waste Management and Landfill Symposium	Sardinia, Italy
Ricardo Sigua	May 18-20, 2011	U-Turn Scheme: A Form of Roundabout	The International Roundabout Conference	Indiana, USA
Eric Augustus Tingatinga	July 4-6, 2011	Gravity Effects on Earthquake Response if Multi-storey Building Undergoing Large Displacements	8th International Conference on Structural Dynamics (EURODYN 2011)	Leuven, Belgium
Jose ReginRegidor	June 20-23, 2011	An Exploratory Study on the Flexibility of Electric Jeepneys as a Public Transport Mode and Evaluating the Effectiveness of Traffic Schemes for an Open Campus	The 9th International Conference of the Eastern Asia Society of Transportation Studies (EATS 2011)	Jeju, Korea
DChE				
Wilfredo Jose	June 15-18, 2011	Introducing a Locally Developed Idea-generating Technique for Educational and Research Purposes	31st Annual Meeting and Symposium	NIP, CS, UPD
	October 12-14, 2011	A Method to Enhance Capability in Developing Innovations in Teaching and Creativity in Research	Education and Research Technology (ERT) Forum 2011	APRU in Mexico City, Mexico
DCS				
Jaime D.L. Caro	May 2-6, 2011	A Real-Time Web-Based Delphi Study on ICT Integration Framework in Basic Education	2011 International Conference on Telecom Technology and Application	Sydney, Australia

Rowena Solamo	March 15-17, 2011	Pitch Paradise: Development and Evaluation of a Mobile Game as a Tool for Learning Music	The International Conference on Data Engineering and Internet Technology (DEIT 2011)	Bali, Indonesia
Vena Pearl Bongolan	June 20-22, 2011	Scalar Transport in an Oscillatory Velocity Field Evolving Under Boundary Noise	Second International Conference on Random Dynamical Systems	Nanjing Normal University, China
Jaime DL. Caro	June 3-5, 2011	"Towards a National OCT Integration Framework in Basic Education: A Delphi-Based Approach"	The 2011 3rd International Conference on Future Computer and Communications (ICFCC 2011)	Iasi, Romania
	May 23-25, 2011	"A Case Study of Philippine ICT Integration Initiatives in Basic Education"	The 1st ACIS/NJU Conference on Computer, Networks, Systems and Industrial Engineering (CNSI 2011)	Jeju Island, Korea
Abigail Razon	September 1-2, 2011	Readability Analysis of Grade School Reading Books using Concept Indexing with K-Means Clustering	The 2011 International Symposium on Multimedia and Communication Technology	Hokkaido University, Sapporo, Japan
Cedric Angelo Festin	August 22-25, 2011	Convergence and Health Computing	2nd Annual Mobile Health Asia Summit	Singapore
Henry Adorna	October 24-26, 2011	A Spiking Neutral P System Simulations on a High Performance GPU Platform	International Symposium on Advances of Distributed Computing and Networking (ADCN 2011)	Melbourne, Australia
Henry Adorna	August 23-26, 2011	A Spiking Neural P System Simulator Based on CUDA	12th International Conference on Membrane Computing	Fontainebleau, Paris, France
Adrian Roy L. Valdez	May 26-27, 2011	A Spatio-Temporal Model for the Population Dynamics of PyriniumBahamensevar: Compressum with a Nutrient with a Nutrient Source and Wind Effects	Asia Modelling Symposium 2011	Diamond Hotel, Manila
EEEI				
Micheal Angelo A. Pedrasa	January 17-19, 2011	Robust Scheduling of Residential Distributed Energy Resources Using a Novel Energy Service Decision-Support Tool	2nd Conference on Innovative Smart Grid Technologies (ISGT 2011)	Hilton Anaheim, California, USA
Louis P. Alarcon	May 14-20, 2011	A Low-Leakage Parallel CRC Generator for Ultra-low Power Applications	The International Symposium on Circuits and Systems (ISCAS)	Rio de Janiero, Brazil
Allan Nerves	May 26-27, 2011	Multi-Objective Transmission Expansion Planning Using an Elitist Non-dominated Sorting Genetic Algorithm With Fuzzy Decision Analysis	Asia Modelling Symposium 2011	Diamond Hotel, Manila
Christian Raymund Roque	March 30- April 01, 2011	Static Noise Margin of 6T STRAM Cwll in 90nm-CMOS	13th International Conference Modelling and Simulation	London, UK
Rowel Atienza	February 20-21, 2011	ACTION-Based Authentication Schemes for Mobile Devices	2011 International Conference on Computers, Controls and Automation (CCCA 2011)	Shatin, Hongkong

Joy Alinda Reyes-Madamba		Dual Edge Flip Flop Implementations of the 090Nm Process, Logic Style Comparison Using 32-Bit CLA in 90Nm Technology, Comparative Analysis of Low Power Multiplier Architectures, Comparison of Replica Bitline Technique and Chain Delay Technique as Read Timing Control for Low-Power Asynchronous SRAM, and Reservoir: An Alternative Load Balancing Technique and for Parallel Ray Tracing (5papers)	Asia Modelling Symposium 2011	Manila
Marc Caesar Talampas	October 28-31, 2011	"Detection of Millimeter Movements Using Ultrasonic Ranging and Precise Time Synchronization in Wireless Sensor Networks"	IEEE Sensors Conference 2011	University of Limerick, Ireland
Joanna Pedrasa	September 1-2, 2011	Pilot Study of User Perception and Application Usage on Mobile Devices	International Symposium on Multimedia and Communication Technology (ISMAC)	Sapporo, Japan
Joanna Pedrasa	October 2-5, 2011	Determining Network Availability on the Move	Asia-Pacific Conference on Communications (APCC 2011)	Sabah, Malaysia
Rowena Cristina Guevara	November 21-25, 2011	Design and Implementation of a Parameter-Based Voice Enhancement Device (VED) for Next Generation Networking and Feature Set for Philippine Gong Music Classification by Indigenous Group	IEEE TENCON 2011	Bali, Indonesia
Joel Joseph S. Marciano Jr	October 11-21, 2011	Real-World Deployment of a Locally-Developed Tilt and Moisture Sensor for Landslide Monitoring in the Philippines	2011 IEEE Global Humanitarian Technology Conference	Seattle, USA
Bienvenido M. Malquisto Jr.	November 14-16, 2011	A Practical and Effective Approach to Retraining Electrical Engineers in Small Electric Distribution Utilities	International Conference on Teaching and Learning	Penang, Malaysia
Allan C. Nerves	November 21-24, 2011	Marginal Loss Surplus Redistribution through Aumann-Shapley Joint Transmission Loss Cost Allocation in Electricity Markets	TENCON 2011	Bali, Indonesia
Roel M. Ocampo	September 1-2, 2011	Congestion-Free Routes for Wireless Mesh Networks	2011 International Symposium on Multimedia and Communication Technology (ISMAC 2011)	Sapporo, Japan
DGE				
Ariel C. Blanco	October 2-6, 2011	Monitoring and GIS-based Analysis of Water Quality of Esteros in Manila	4th IWA-ASPIRE 2011	Tokyo, Japan
Florence Galeon	May 18-22, 2011	Determining Formalities of Settlement Clusters Using Fractal Dimensions	FIG Working Week and General Assembly	Marrakech, Morocco
Oliver T. Macapinlac	January 26-27, 2011	GIS-based landslide susceptibility Analysis of Antipolo City Philippines Using Analytical Hierarchy Process	ESRI Asia Pacific User Conference (APUC)	EDSA Shangrila, Manila

Enrico C. Paringit	May 18-22, 2011	The Use of Geospacial Information and the Role of Surveyors in Meeting the Challenges of Disaster Risk Reduction and Climate Change Adaptation: The Case of the Archipelagic Nation the Philippines	FIG Working Week and General Assembly	Marrakech, Morocco
DME				
Menandro S. Berana	November 17-20, 2011	Ejector Powerplant System	AFORE-1	Busan, South Korea
DMMME				
Richard DV. Espiritu	September 4-9, 2011	Synthesis Characterization of Cu-Zn-Sn Shape Memory Alloy via Electroposition of Tin on Brass	The International Conference on Martensitic Transformations (ICOMAT)	Osaka, Japan
Jason Agdeppa	June 28-2,2011	PSInSAR Detection of Ground Subsidence and Fault Movement in Muntinlupa City, Metro Manila and Biñan Laguna	The International Remote Sensing, Natural Hazards and Environmental Change (RSNHEC) Conference	Singapore
Djoan Kate Tungpalan	Janaury 21-22, 2011	Potential of Dissolved Air Flotation (DAF) for Removal of Suspended Nickel Laterite Particles	The 3rd AUN/SEED-Net Regional Conference on Global Environment	Kuala Lumpur, Malaysia
Eduardo R. Magdaluyo	June 26 - July 1, 2011	Enzyme-mediated Synthesis of Chitosan-cysteine/-glutahione Conjugates	2011 International Conference on Materials for Advanced Technologies (ICMAT 2011)	Singapore
DIEOR				
Iris Ann G. Martinez	April 29- May 2, 2011	A Methodology for the Planning of Worksheet Inventory in Tuition Centers Following the Systematic Progression of Students through Levels	22nd Annual Conference of the Production and Operations Management Society	Reno, Nevada, USA
Virginia J. Soriano	March 11-12, 2011	Product Design for the Environment: A Life Cycle Approach	The 2011 PIIE National Congress: Operational Excellence Towards Sustainability	Cebu City, Philippines
2012				
ICE				
Maria Antonia Tanchuling	May 28, - June 2, 2012	2012 Asia Pacific Rim Universities (APRU) Fellow Program	The Cost of Water for Three Communities of Informal Settlers in Navotas, Philippines	Singapore
Jaime Y. Hernandez	September 24-28, 2012	Development of a Low-Cost Wireless Sensor Network for Monitoring of Earthquakes in Developing Countries	15th World Conference on Earthquake Engineering, Lisbon, Portugal	Lisbon, Portugal
Eric Augustus Tingatinga	September 24-28, 2012	Earthquake Response Analysis & Simulation of Sensitive Hospital Equipment	World Conference on Earthquake Engineering	Lisbon, Portugal
Augustus Resurreccion	October 21-24, 2012	Removal of Heavy Metals From Aqueous Solutions Using Cocopeat	2012 International ASA_CSSA-SSSA Annual Meeting	Cincinnati, Ohio, USA
DChE				
Mark Daniel G. De Luna	February 21-24, 2012	Synthesis and Characterization of Cellulose Acetate-Glucose Oxidase Nanofibers for Biosensor Applications	14th Asia Pacific Confederation of Chemical Engineering Congress	Singapore

	February 8-11, 2012	Ultrasound -assisted Electro-Feton Degradation of Reactive Yellow 145 dye in Simulated Wastewater: Use of RuO2/IrO2-coated Plate Electrodes	4th Regional Conference on Chemical Engineering	Petaling Jaya, Malaysia
	January 26-29, 2012	Degradation of Reactive Blue 19 using electron-fenton process with in-situ H2O2 Generation	1st International Sustainability for Technology Symposium	Bangkok, Thailand
Analiza P. Rollon	April 10-12, 2012	Biodegradation and Sorption of a 17-Ethinylestradiol in Submerged Membrane Bioreactor: Effect of Initial Ammonium Concentration	Environmental Microbiology and Biotechnology Conference	Bologna, Italy
Maria Lourdes p. Dalida	August 27-29, 2012	Removal of Nitrogen from Landfil Leachate Using Anoxic Sequencing Batch Reactor (ASBR) and Membrrane Bioreactor (MBR)	8th International Workshop on Innovative Anaerobic Technology	Taichung, Taiwan
	November 25-30, 2012	Heavy Metal Removal Property of Graphene - Based Polymer Nanocomposite	2012 Materials Research Fall Meeting	Boston,Massachusetts, USA
Dr.Wilfredo Jose	December 9-12, 2012	Exploiting the Concept of Paradigms to Develop a Method of Generating Ideas	The 5th ISPIM	Seoul, Korea
DCS				
Henry Adorna	June 18-23, 2012	Notes on Spiking Neural P Systems and Petri Nets	Turing Centenary Conference:Computability in Europe 2012, How the World Computes	University of Cambrigde, UK
Mario Carreon	September 10-12, 2012	SPREAD: Appreciating Speech through Gaming	International Conference Series on Disability, Virtual Reality and Associated Technologies 2012	Laval, France
EEEI				
John Richard Hizon	May 20-23, 2012	A Compact Linearly Tunable Low Voltage Triode OTA Using Self-Cascodes	International Symposium on Circuits and Systems 2012	Seoul, South Korea
	August 4-9, 2012	A High Transconductance Efficiency FGMOS OTA for gm-C Ladder Filters	International MidWest Symposium on Circuits and Systems 2012	Boise, Idaho, USA
RhandleyCajote	April 11-13, 2012	Flexible Macroblock Ordering based on Region of Interest for H.264/AVC Wireless Video Transmission	International Conference on Systems Signal and Image Processing	Vienna, Austria
Michael Angelo A. Pedrasa	July 22-26, 2012	Investigating the Value of Making Hourly Operations Decisions for Residential Distributed Energy Resources	IEEE Power and Society General Meeting 2012	San Diego, California, USA
Jordan Rel C. Orillaza	June 17-20, 2012	Harmonic Planning Level in New Zealand Medium Voltage Networks	15th IEEE International Conference on Harmonics and Quality of Power (ICHQP 2012)	Kowloon Shangri-la, Hongkong
Rowel O. Atienza	August 20-23, 2012	Experience in Developing Mobile Educational Games	IEEE International Conference on Teaching, Assessment and Learning for Engineering 2012 (TALE 2012)	The Hong Kong University, Hong Kong

DGE				
Rhodora M. onzalez	July 22-27, 2012	Remote Sensing, Geographic Information Systems, and Artificial Neural Networks for Rainfall Estimation in Large Watershed	IEEE Geoscience and Remote Sensing Symposium 2012	Munich, Germany
Ariel C. Blanco	August 25 -September 1, 2012	Extraction of Benthic Cover Information from Video Tows and Photographs Using Object-based Image Analysis	22nd International Society for Photogrammetry and Remote Sensing	Melbourne, Australia
Enrico C. Paringit	November 25-30, 2012	High Resolution Digital Elevation Dataset Derived from Airborne LiDAR for Flood Hazard Assessment and Mapping Applications	33rd Asian Conference on Remote Sensing	Pattaya, Thailand
DIEOR				
Iris Ann G. Martinez	July 21-25, 2012	Investigation of Workers' Progress Along the Learning Curve – with Case Study on the Workers of a Baseball and Hockey Glove Manufacturing Business in the Philippines	4th Applied Human Factors and Ergonomics Conference,	San Francisco, USA
Ronald Aaron Po	July 21-25, 2012	An Analysis on the Suitability and Comprehensibility of the Globally Harmonized System for Hazard Classification and Labeling for Filipinos	4th Applied Human Factors and Ergonomics Conference,	San Francisco, USA
Aura C. Matias	July 21-25, 2012	A Study on Shoe Sizing Systems: Foot Anthropometry of Filipino Children Aged 7-12 Perceptions of Traffic Enforcers on Road Traffic Noise and its Potential Non-Auditory Effects	4th Applied Human Factors and Ergonomics Conference,	San Francisco, USA
DME				
Menandro S. Berana	June 24-28, 2012	Simulation on Shock Waves in Supersonic Flow of CO2 through a Converging-Diverging nozzle of Transcritical Ejector Refrigeration System	10th IIR Gustav Lorentzrn Conference on Natural Refrigeration System	Delft University of Technology, Delft, The Netherlands
Menandro S. Berana	November 21-23, 2012	Localization and Savings in Utilization of External Melt Thermal Storage System for Airconditioning Application in the Philippines; A Proof of Concept	Sustainable Future Energy 2012 and 10th SEE Forum	Brunei, Darussalam
DMMME				
Richard DV. Espiritu	September 9-17, 2012	Characterization on Cu-Zn-Al Shape Memory Alloy Fabricated via Electrodeposition -Annealing Route	9th European Symposium on Martenstic Transformation 2012	St. Petterburg, Russia
Michael Leo Dela Cruz	July 8-13, 2012	Nano-Clay Supported ZeroValent-Iron as an Efficient Adsorbent Material for Arsenic	8th International Materials Technology Conference and Exhibition	Selangor, Malaysia
Lady Marianne Polinga	June 24-28, 2012	Formation and Mechanical Characterization of Woven Abaca/Unsaturated Polyester Composites	European Conference on Composites Materials	Venice, Italy
Manolo G. Mena	September 30, 12 to October 5, 2012	Electromigration of Silver in Electronics Application	51st Annual Conference of Metallurgist COM2012	Niagara Falls, Toronto, Canada
Eden May D. Dela Peña	July 8-13, 2012	Modeling of a Fixed bed Column for the Adsorption of Arsenic on Electrospun PCL Nancomposite	8th International Materials Technology Conference and Exhibition	Selangor, Malaysia

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Department of Science and Technology

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Director
Science Education Institute
Department of Science and Technology

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Philippine Council for Industry, Energy and Emerging Technology Research and Development
Department of Science and Technology

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UNIVERSITY OF THE PHILIPPINES

UNIVERSITY OF SAN CARLOS

COLLEGE OF ENGINEERING, UNIVERSITY OF THE PHILIPPINES–DILIMAN
ROOM 201, MELCHOR HALL, U.P. DILIMAN, QUEZON CITY
TEL. NO.: 981-8500 LOC 3160; 434-0304 (telefax)
erdt_up@yahoo.com