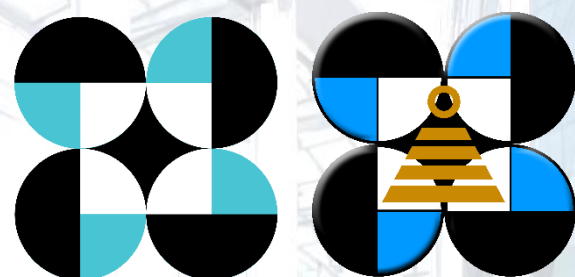


Engineering Research and
Development for Technology

2016

ANNUAL REPORT



Science Education institute
Department of Science and Technology

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The ERDT

The Engineering Research and Development for Technology (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 University (MU), Mindanao State University – Iligan Institute of Technology (MSU-IIT), University of the Philippines (UPD) Diliman, UP Los Baños (UPLB) 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).

BRIEF HISTORY

In April 2007, Dean Dr. Rowena Cristina L. Guevara of the UP Diliman College of Engineering (COE) together with other 6 deans of engineering schools came up with a proposed human resource development (HRD) program to the Department of Science and Technology (DOST). The proposed program generally aims to increase the number of researchers, scientists and engineers (RSEs) in the country.

The ERDT Consortium was then conceptualized, endorsed by former DOST Secretary Estrella F. Alabastro, and approved by former President Gloria Macapagal-Arroyo with a P3.5 Billion funding for three years.

In the last nine years, ERDT has successfully laid the footprint and model for a successful engineering research program in the country. Number shows that through the ERDT R&D program, 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.

As a program funded by the DOST, the ERDT hopes to build a culture of R&D in the Philippines by increasing our numbers of highly trained RSEs and providing a suitable research environment. At present, ERDT continues to increase the number of RSE graduates and contribute to the realization of S&T plan of the country.

I. HUMAN RESOURCE DEVELOPMENT

A. Local Graduate Scholarship

The ERDT Local Graduate Scholarship is the flagship scholarship program of the ERDT that helps engineering graduate students in pursuing and attaining MS and PhD degrees in any ERDT Consortium University.

This Scholarship further aims to improve the quantity and quality of engineering professionals in the country. The adequate number of engineers with advanced degrees is believed to produce compounding effect on the value chain in the industry for economic growth as well as improving the quality of education in engineering departments of both private and public higher academic institutions.

	2007		2008		2009		2010		2011		2012		2013		2014		2015		2016		Total Intake	
	MS	PhD	MS	PhD	MS	PhD	MS	PhD	MS	PhD	MS	PhD	MS	PhD	MS	PhD	MS	PhD	MS	PhD	MS	PhD
ADMU			16	0	16	0	20	2	16	1	11	1	14	2	18	3	8	3	13	4	151	18
CLSU			15	2	9	3	13	1	8	4	29	1	27	2	23	6	6	5	25	3	178	30
DLSU			11	2	22	1	34	2	32	5	38	8	18	6	29	3	38	4	39	5	294	38
MU			8	1	32	2	14	1	16	7	27	4	46	14	37	5	43	5	36	6	300	52
MSU-IIT			10	2	8	2	15	3	21	3	16	4	29	6	26	9	10	2	18	3	183	38
UPD	38	18	34	15	88	15	85	13	66	6	88	17	89	8	56	11	72	14	85	17	827	151
UPLB					8	4	13	3	3	0	11	3	12	4	17	0	17	3	11	1	109	21
USC			13	0	15	0	10	0	11	0	2	0	14	0	16	3	29	7	30	6	155	19
Total																					2092	326
Target	106	23	133	20	171	32	208	44	233	50	260	55	233	50	233	50	252	56	263	59	2092	439
Hit Rate (%)	52	78	80	110	116	84	98	57	74	52	85	69	107	84	95	80	88	77	98	76	90	74

Table 1. ERDT Local Graduate Scholarship Actual intakes of MS and PhD scholars from 2007 to 2016

MS Degrees				
Year of Award	Qualifiers	Graduated		Total
		On Time	With Extension	
2007	55	7	31	38
2008	107	29	52	81
2009	198	31	96	127
2010	204	28	88	116
2011	173	34	74	108
2012	222	56	60	116
2013	249	47	80	127
2014	222	53	45	98
2015	223	39	17	56
2016	256	1	3	4
TOTAL	1909	325	546	871

Table 2. ERDT Local Graduate Scholarship MS Graduates from 2007 to 2016

PhD Degrees				
Year of Award	Qualifiers	Graduated		Total
		On Time	With Extension	
2007	18		11	11
2008	22		10	10
2009	27	3	16	19
2010	25	2	11	13
2011	26	1	9	10
2012	38	4	8	12
2013	42	4	3	7
2014	40	7		7
2015	40	1		1
2016	43			0
TOTAL	321	22	68	90

Table 3. ERDT Local Graduate Scholarship PhD Graduates from 2007 to 2016

B. Sandwich Program

The ERDT Sandwich Program is a fellowship offered to ERDT scholars who wish to conduct research in a reputable university abroad for a maximum period of one year. It is designed to enable ERDT Local Graduate Scholars to conduct research abroad in areas that have yet to be developed in the consortium member university or in fields of studies where research facilities are not available or inadequate in the country.

Year	Slot	Actual Intakes	Status of Intakes			
			Graduated	Returned	On Going	Withdrew
2008	7	1	1			
2009	10	3	3			
2010	12	3	3			
2011	8	7	7			
2012	8	5	4	1		
2013	13	12	6	6		
2014	10	9	7	2		
2015	23	10	10			
2016	20	11	7	3		1
TOTAL	111	61	48	12		1

Table 4. Distribution of ERDT Sandwich Program per Year

Year	University	Slots	Actual Intakes	Status of Intakes			
				Graduated	Returned	On Going	Withdrew
2008		7	1	1			
2009		10	3	3			
2010		12	3	3			
2011		8	7	7			
2012		8	5	4	1		
2013		13	12	6	6		
2014		10	9	7	2		
2015	ADMU	4	3	3			
	CLSU	1					
	DLSU	2	1	1			
	MU	1					
	MSU-IIT	5	1	1			
	USC	1					
	UPD	8	4	4			
	UPLB	1	1	1			
2016	ADMU	4	1	1			
	CLSU	2					
	DLSU	2	2	2			
	MU	1					
	MSU-IIT	4	2	2			
	USC	1					
	UPD	5	5	1	3		1
	UPLB	1	1	1			
TOTAL		111	61	48	12		1

Table 5. Distribution of ERDT Sandwich Program per University

C. Faculty Development Programs

1. Foreign PhD Scholarship

The ERDT PhD Foreign Scholarship is given to faculty members of ERDT Consortium Universities who wish to pursue PhD studies in any engineering field in a recognized university or institution abroad.

Year	Slots	Actual Intakes	Graduated	Returned	Terminated	On-Extension	On-going
2006-2008	10	10	7	1	2		
2009	10	6	4	1	1		
2010	10	5	3		2		
2011	11	5	4	1			
2012	10	5	3		2		
2013	8	6	2	1		3	
2014	10	2	1			1	
2015	8	8	2			1	5
2016	11	9					9
Total	88	56	26	4	7	5	14

Table 6. Faculty Development – Foreign PhD Scholarship Statistics

Year	University	Slots	Awarded	Status				
				Graduated	Returned	Terminated	On Extension	On-going
2006-2008	UPD	10	10	7	1	2		
2009		10	6	4	1	1		
2010		10	5	3		2		
2011		11	5	4	1			
2012		10	5	3		2		
2013		8	6	2	1		3	
2014		10	2	1			1	
2015	CLSU	2	2	2				
	UPD	4	4				1	3
	UPLB	2	2					2
2016	CLSU	2	2					2
	MSU-IIT	2	2					2
	UPD	5	3					3
	UPLB	2	2					2
Total		88	56	26	4	7	5	14

Table 7. Distribution of Faculty Development – Foreign PhD Scholarship per University

2. Post-Doctoral Grant

The ERDT Post-Doctoral Grant allows retooling and retraining of faculty members to ensure that researches conducted and proposed under the ERDT program are current and relevant.

	2008	2009	2010	2011	2012	2013	2014	2015	2016	Total
Recipients	0	6	2	0	2	0	1	1	1	13

Table 8. Post-Doctoral Grantees from 2008 to 2016

3. Faculty Research Dissemination Grant

The ERDT Faculty Research Dissemination Grant (FRDG) is established to enable faculty members to present their research works in international conferences, fora or scientific meetings or publish their research works in journals.

The grant aims to provide opportunities to expand research networks and promote the ERDT program globally.

	2008	2009	2010	2011	2012	2013	2014	2015	2016	Total
Recipients	1	17	51	25	32	43	72	62	60	363

Table 9. FRDG Recipients from 2008 to 2016

4. Faculty Research Grant

The ERDT Faculty Research Grant is created to help the faculty members who are currently enrolled in ERDT supported graduate or accelerated programs in an ERDT Consortium University to complete all their requirements leading to a successful thesis/dissertation defense. The grantee shall be considered as an ERDT scholar with lateral entry.

University	2014				2015				2016			
	Slots		Grantees		Slots		Grantees		Slots		Grantees	
	MS	PhD	MS	PhD	MS	PhD	MS	PhD	MS	PhD	MS	PhD
ADMU	1											
CLSU					1				1			
DLSU		1		1		2		2		2		1
MIT	2											
MSU-IIT	2											
UPD	7	1	2	1	6		4		4		2	
UPLB	2		2									
USC	2				1		1		1			
TOTAL	16	2	4	2	8	2	5	2	6	2	2	1

Table 10. Faculty Research Grantees from 2014 to 2016

D. Visiting Professors and Researchers Program

The ERDT Visiting Professors and Researchers Program provides for the invitation and hosting of internationally known professors and researchers to visit ERDT Consortium University.

Beneficiaries of this program include ERDT Local Graduate Scholars, faculty members, and the hosting department/institute of the ERDT Consortium University. The ERDT consortium will likewise benefit from this through potential R&D collaboration.

	2008	2009	2010	2011	2012	2013	2014	2015	2016	Total
Visiting Professor	10	21	12	3	9	11	9	12	6	93
Visiting Researcher	1	2				1				4

Table 11. Visiting Professors and Researchers from 2008 to 2016

II. ANNUAL EVENTS AND ACTIVITIES

ERDT holds Research Management Training for Faculty Advisers

The Engineering Research and Development for Technology (ERDT) successfully conducted the ERDT Research Management Training 2016 held last March 12-13, 2016 at the Summit Ridge Hotel, Tagaytay City, Cavite. It was attended by a number of engineering faculty members who are handling ERDT graduate scholars from the eight consortium universities.

ERDT Program Leader Dr. Aura C. Matias delivered the welcome remarks and stressed out the importance of the role of thesis advisers in helping graduate students finish their degrees.

Dr. Matias added that the training is designed to help improve the participants' skills in engineering research management and graduate students mentoring. She ended her spiel thanking the eight member universities and urging for future research collaborations among the consortium.



Faculty advisers and participants of the ERDT Research Management Training pose for a group shot with ERDT Program Leader Dr. Aura C. Matias.

First to present her topic entitled "*Starting Your Research Career*" is Dr. Susan B. Pancho-Festin, a professor from the Department of Computer Science of the University of the Philippines Diliman (UPD). In the first part of her topic, *Building Your Research Agenda*, she advised researchers to first conduct a SWOT (Strengths, Weaknesses, Opportunities and Threats) Analysis on themselves to be able to use their strengths on their favor and figure out how they could overcome weaknesses and threats. Segueing to the second part of her topic, Dr. Festin listed a number of organizations, such as USAID, EU, AUN/SEED-Net, among others, that provide grants to researchers for research projects. Dr. Festin told the participants to always conduct regular meetings with members of the research team for effective resource management.

Dr. Luis G. Sison, a professor from the Electrical and Electronics Engineering Institute of UPD presented his topic entitled *"Opportunities and Challenges in Research Management"*, where he discussed about Technology Transfer and Technopreneurship. Dr. Sison defined innovation as a result of both technical capabilities and customer needs. He imparted to the participants the stages of technology transfer, from the laboratory to commercialization, and how essential it is to communicate with end-users to prevent innovations from failing. Furthermore, Dr. Sison stated that in the process of determining the Technology Readiness Level (TRL), a number of thesis projects can be generated.

Before the third speaker, a group activity was conducted. The participants were grouped according to their respective universities and were asked to perform a SWOT Analysis on the state of Research and Development (R&D) in their universities.



ERDT Program Leader Dr. Aura C. Matias observes the dynamics of one of the groups and gives her insights afterwards.

The third presenter of the training was Dr. Cedric Angelo M. Festin who presented his topic entitled *"Collaboration in Research"*. Dr. Festin is a professor from the Department of Computer Science of UPD. He first shared about his early career as a researcher and how research grants given to him were very small in amount then. His experience supervising both graduate and undergraduate students with their research projects made him learn that there are different views and ways on how things work. This insight was useful in collaborating with sociologists and economists who are part of his team in his research project Village Base Station. He said that when researchers from different disciplines come together, the problem at hand will be viewed in different perspectives. At times, one view will be contrary to another, creating rifts between researchers. It is therefore imperative to practice patience and to have an open-mind to successfully implement the project.

The fourth part of the training was delivered by three different speakers, each of them tackling topics on *"Mentoring"*. Sharing his knowledge on writing publishable scientific articles was Dr. Allan N. Soriano, a professor from the School of Chemical Engineering

and Chemistry of the Mapua Institute of Technology (MIT). He discussed the significance of publishing research studies on scientific papers, saying that the study will remain as grey literature, will not be cited at all, and will be as if the research was never conducted, if it remains unpublished.

Engr. Ramon G. Garcia, a professor from the School of Electrical, Electronics and Computer Engineering of MIT, imparted to the participants the roles and responsibilities of a research adviser. A research adviser, he said, must be able to guide the student to complete his/her thesis at a certain standard, to encourage the student not to produce mediocre work. An adviser must also determine the viability of the thesis to ensure on-time graduation of the student. Engr. Garcia went on with discussing to the participants the good practices for on-time graduation, saying that the student must be fully committed with his/her chosen topic.

Gracing the podium with his comical presentation was Dr. Andres Winston C. Oreta, a professor from the Department of Civil Engineering of De La Salle University (DLSU). He started his presentation by showing the participants the masters and doctoral students that he was able to help graduate. Some of them, he merrily stated, are currently his bosses at DLSU. Afterwards, he tackled on the reasons why graduate students fail to finish their thesis on time, or not at all. Reasons such as lack of research skills, insufficient funds, and delayed procurement of equipment, among others, affect greatly the on-time completion of the student's thesis. Being a good research adviser means being able to help the student overcome the aforementioned reasons. He continued by presenting to the participants the different, but equally important, tasks of a thesis adviser.

The presentation of Dr. Oreta was followed by another group activity. The participants were grouped according to the different R&D Tracks such as Energy, Environment and Infrastructure, Information and Communications Technology, Manufacturing and Machinery, and Semiconductor Materials and Electronics. All groups were to identify their ideal R&D using the Program Logic Method where they determine the required inputs and activities to be able to produce their target outputs and outcomes, and consequently reach their desired goals.

The last part of the training consisted of presentations from the different groups. DLSU and MSU-IIT were asked to present the results of their SWOT Analysis. Representatives from the different R&D tracks were also required to present to the audience the results of their brainstorming. The presentations were followed by the awarding of certificates of participations to all the faculty research advisers.



Faculty advisers show approved sign after successfully deliberating their tasks.

Dr. Matias ended the program with her closing remarks. The program was hosted by Ms. Amabelle Ayop of DLSU and Ms. Charisse Cena of Ateneo de Manila University.

ERDT Project Staff Harmonization of Operations Training

In November 24-26, the ERDT held the Project Staff Harmonization of Operations Training at The Oriental Hotel, Albay. The training is aimed at establishing a uniform understanding on the different existing and proposed policies related to ERDT HRD programs within the ERDT consortium, creating uniform mechanisms in managing these programs, creating different means to monitor, update and ensure on-time graduation of scholars, providing trainings to newly hired project staff, and building camaraderie and establishing commitment from all project staff.



ERDT staff posed for a group picture after the discussion.

At the end of the training, the ERDT consortium came up with agreed and uniform ways of documenting and monitoring its scholars across different universities (from recruitment up to fulfillment of return of service), a common calendar and dates for the remembrance of the preparation and submission of required documents (status of scholars, financial documents, annual reports, faculty profile, etc.) and a list of ways to further improve the operations within the ERDT consortium.



Together, the ERDT staff from the different consortium universities had a brief tour around the area at the end of their two-day training.

Industrial Policy, Climate Change and Energy: Charting a Sustainable Future

The *Industrial Policy, Climate Change and Energy: Charting a Sustainable Future* Forum is aimed at introducing an initial discussion linking industrial policy, climate change and sustainable energy. It was held on December 6-7, 2016 at the University of the Philippines Diliman, College of Engineering Theatre and was hosted by ERDT in partnership with the Action for Economic Reforms – Industrial Policy Team (AER-IP Team)



Forum Panelists (From L to R): Ms. Jenina Joy Chavez of AER-IPT, Dr. Rene Ofreneo of UP SOLAIR, Dir. Jesus Tamang of DoE, and Dr. Rizalinda L. de Leon of UP CoE.

The forum was designed as an introductory dialogue among different stakeholders, with the end view of strategizing towards longer-term engagement. Its ultimate goal is identifying specific research, advocacy and policy issues that can be pursued, either together or separately, by the different participants.

The results of the dialogue from the first day form part of the post-forum discussion which was held at Day 2.

Appendix A

List of 2016 Graduates with Titles and their Theses and Dissertations

	Name of Scholar	Degree Completed	Field of Study	Month and Year of Graduation	Title of Thesis/ Dissertation
1	Chan, Jacob T.	MS	Computer Science	May 2016	Ideal Flow and Critical Node Analysis of the Metro Manila Road Network
2	Co, Isabelle-Lynn T.	MS	Computer Science	December 2016	Integrating Philippine Health Indices Towards the Development of a Typhoid Disease Model Using Stem
3	Corvera, Jan Alain C.	MS	Electronics Engineering	May 2016	Field Programmable Gate Array (FPGA) Implementation of Parallel Iterative Schedulers for Optical Interconnection Networks
4	Daga, Ryan Rey M.	MS	Computer Science	May 2016	New Algorithms for Image Compression Based on Block Truncation Coding
5	Eser, Xavier Jeaspher O.	MS	Computer Science	July 2016	An Algorithm for Accurate Real-Time Background Subtraction
6	Espera, Alejandro Jr. H.	MS	Electronics Engineering	May 2016	A Field Programmable Gate Array in the Loop Simulation of an Artificial Neural Network Based Optimization Design of Greenhouse

					Supplemental Illumination
7	Lucena, Marco C.	MS	Computer Science	July 2016	Sorting Decreasing Permutations by Short Swaps
8	Peña, Robert Alfie S.	MS	Electronics Engineering	May 2016	Dynamic Photovoltaic Array Reconfiguration to Mitigate the Effects of Partial Shading
9	Pulmano, Christian E.	MS	Computer Science	December 2016	Development of SIANN: SHINE Intelligent Assistant using Neural Networks for Electronic Medical Records
10	Ronquillo, Mark Joseph D.	MS	Computer Science	December 2016	EMS-GT2: An improved exact solution for the (l,d) planted motif search problem
11	Salazar, April M.	MS	Electronics Engineering	May 2016	Hotspots Identification in Photovoltaic Modules Using Infrared Imaging
12	Vicente, Celesamae T.	MS	Computer Science	July 2016	Modeling Visual Attention of Students Using Physics Playground
Central Luzon State University					
13	Asuncion, Nestor	MS	Agricultural Engineering	February 2016	Design, Fabrication and Performance Evaluation of a Belt Conveyor Dryer for Drumstick (<i>Moringa oleifera</i>) Leaves
14	Decano, Cristina S.	MS	Agricultural Engineering	February 2016	Development of (<i>Zea mays</i> L.) Stalk Geotextile Net for

					Soil Erosion Mitigation
15	Declaro, Allen Julius Christ	MS	Agricultural Engineering	February 2016	Mechanization of the Harvesting Operation in Vermicompost Production
16	Griengo, Sheila	MS	Agricultural Engineering	February 2016	Soil Loss Mitigation Using Synthetic Polymer Under Simulated Condition
17	Juliano, Arnold	Ph.D.	Agricultural Engineering	February 2016	Development of a Ricehull Gasifier Engine-Pump System for Optimum Application in Rainfed Lowland Farm
18	Mercado, Flordeliza	MS	Agricultural Engineering	February 2016	Medium-Scale Multi-Juice Extractor For Food Processing
19	Pascua, Daryl	MS	Agricultural Engineering	February 2016	Hydrological Modeling of Sapang Buho River Basin Using Integrated Flood Analysis System
20	Vergara, Adornado	PhD	Agricultural Engineering	February 2016	Development of Nomographs for Sizing a Centrifugal Pump as Turbine for Electric Power Generation
21	Siano, Dharell B.	MS	Agricultural Engineering	July 2016	Processing and Economic Analysis of Rain Tree (<i>Samanea saman</i>) Pods for Village Level Hydrous Bioethanol Production"
22	Valdez, Walter G.	PhD	Agricultural Engineering	July 2016	Application of GSM Network for Automated Soil Moisture Index (SMI) Monitoring

De La Salle University					
23	Arbon, Nechoh A.	MS	Mechanical Engineering	February 2016	Performance, Emission and Net Energy Analysis of a Diesel Genset Using Producer Gas from Jatropha Press-Cake in Dual Fuel Mode
24	Barajas, John Raymond B.	MS	Chemical Engineering	October 2016	Evaluation of Moringa Oleifera Cationic Protein Functionalized Rice Husk Ash as Point-Of-Use Water Treatment for Water Disinfection
25	Calapatia, Earl Arvin A.	MS	Computer Science	October 2016	Recognizing Affect Based on Body Movement and Contextual Information
26	Capeding, Kimberly Anne H.	MS	Civil Engineering	June 2016	Development of a Damage Identification Method for Buildings Using Artificial Neural Networks (Anns)
27	Caringal, Kristian Lawrence V.	MS	Civil Engineering	June 2016	Numerical Investigation on the Effects of Local Damage to the Dynamic Properties of Buildings Using Limited Vibration Data
28	Choi, Angelo Earvin S.	PhD	Chemical Engineering	June 2016	Desulfurizaion of Sulfur Compounds in Diesel Oil through Oxidation, Adsorption and Sulfone Destruction
29	Co, Clarence Joseph U.	MS	Chemical Engineering	October 2016	Development of Graphene Oxide/Bio-Based

					Polymer Hybrid Composite Aerogels for Carbon Dioxide Capture
30	Cua, Ric Madison U.	MS	Chemical Engineering	October 2016	All Chromium Redox Flow Battery System with Trishydroxymethyl Aminomethane as Stabilizing Agent
31	Dizon, Arniel Ching O.	MS	Chemical Engineering	February 2016	Microwave-Irradiated Zinc Chloride Catalyzed Glycerolysis of High Free Fatty Acid Vegetable Oil
32	Faelden, Gerard Ely U.	MS	Electronics & Communications Engineering	October 2016	Implementation of the Swarm Intelligence Behavior Social Foraging in Unmanned Aerial Vehicle (UAV) Quadrotors
33	Gagan, Jayvee L.	MS	Civil Engineering	June 2016	Evaluation of the Effects of Combining Pig-Hair Fiber as Fiber Reinforcement and Green Mussel Shells as Partial Cement Substitute to the Properties of Concrete
34	Galvez, Reagan L.	MS	Electronics & Communications Engineering	October 2016	Obstacle Avoidance Algorithm for Swarm of Quadrotor Unmanned Aerial Vehicle (UAV)
35	Gesalem, Jiaan Regis G.	MS	Civil Engineering	June 2016	Development of Volume Delay Functions for Trip

					Assignment in Metro Manila
36	Gomez, Rainier G.	MS	Chemical Engineering	February 2016	Development of A Multi-Criteria Decision Analysis Model Using Enhanced Fuzzy AHP and PROMETHEE in Selecting Climate Change Mitigation Options
37	Intal, Ramon Christopher D.	MS	Electronics & Communications Engineering	October 2016	Development of Centralized Bus Management System for Metro Manila Bus Stations
38	Isip, Marc Immanuel A.	MS	Industrial Engineering	February 2016	A Development of a Multi-Perspective Assessment Tool in the Evaluation of the Service Quality of Public Higher Education Institutions in the Philippines
39	Macaraeg, Carlo Joshua M.	MS	Civil Engineering	June 2016	Development of Seismic Amplification Maps: The Case of Metro Manila
40	Maningas, Abel Ross A.	MS	Manufacturing Engineering and Management	February 2016	Design and implementation of a data management system for an android ECG device
41	Maningo, Jose Martin Z.	MS	Electronics & Communications Engineering	October 2016	Swarm Aggregation Implementation in Quadrotor Unmanned Aerial Vehicle Swarm using Smoothed Particle Hydrodynamics

42	Mas, Michael Jayson S.	MS	Civil Engineering	June 2016	Numerical Study on the Effect of Structural Parameters on the Behavior of Buckling-Restrained Braced Frame in Eccentric Configurations (BRBF-E)
43	Nakano, Reiichiro Christian S.	MS	Electronics & Communications Engineering	October 2016	Simulation and Implementation of Physicomimetics in Quadrotor Swarms
44	Ngo, Patrick Jerome C.	MS	Chemical Engineering	February 2016	Multiple Response Optimization of pH, Coagulant Dose and Coagulant Types on Different Water Conditions using PACl and PSF
45	Pabilona, Wincent Nicole K.	MS	Civil Engineering	June 2016	Strenght Properties of Cemented-Paste Backfill Materials Mixed with Mining Wastes
46	Purio, Mark Angelo C.	MS	Electronics & Communications Engineering	October 2016	Development of an Underwater Machine Vision for Coral Detection
47	Ramos, Danniell Jerome B.	MS	Civil Engineering	February 2016	Seismic Analysis of a Bridge Structure on Liquefiable Deposits Using a Spatially Varying Ground Motion
48	Ting, Sean JohnLee Q.	MS	Civil Engineering	June 2016	Public Transport Demand Modeling For Metro Manila, Philippines

49	Tiu, Bryan Timothy C.	MS	Industrial Engineering	October 2016	Development of a Multi-Period Optimization Model for Designing a Planned Eco Industrial Park Network
50	Uson, Christian Adrian M.	MS	Chemical Engineering	June 2016	Gas-Phase Benzene Decomposition using Copper Oxide – Cerium Oxide in a Non-Thermal Plasma Catalysis Reactor
51	Ventura, Christopher C.	MS	Chemical Engineering	June 2016	Effect Of Ni-Cu Ratio In Ni-Cu/ γ - Al_2O_3 For Carbon
52	Vicerra, Ryan Rhay P.	PhD	Electronics & Communications Engineering	February 2016	Swarm Intelligence Development Environment and Underwater Swarm Robotics Platform – Principles of Swarming for Underwater Data Communication
53	Yu, Jiane Melina L.	MS	Chemical Engineering	October 2016	Functionalization of Graphene Oxide Using Supercritical Carbon Dioxide – Subcritical Water System and Evaluation of its Catalytic Activity in Biodiesel Production
Mindanao State University – Iligan Institute of Technology					
54	Baguhin, Israel A.	MS	Civil Engineering	January 2016	Production of concrete paving blocks utilizing dolomitic Limestone powder as partial

					cement replacement
55	Dansilay, Tessa U.	MS	Civil Engineering	January 2016	Utilization of Pulverized Fuel Ash in the production of non-load bearing concrete hollow blocks
56	Esic, Jhon Ray M.	MS	Electrical Engineering	January 2016	Formal Equivalence Verification Between Register Transfer Level/Gate-Level Netlist and FPGA Full-Chip Netlist Using Cadence Conformal Logic Equivalence Checker
57	Galia, Claudio III M.	MS	Computer Applications	January 2016	Minutiae Quadruplets Approach in Fingerprint Indexing with Parallel Matching for Fingerprint Identification
58	Gorre, Jeffrey R.	MS	Electrical Engineering	January 2016	Real-Time Energy Management System for an Institutional Building
59	Gulben, Daxter William L.	MS	Electrical Engineering	June-16	A Probabilistic Reliability Assessment for Transmission Development Planning in the Philippine Restructured Power Industry Using Monte Carlo Simulation
60	Remocaldo, Genesis N.	MS	Mechanical Engineering	January 2016	Conceptual Design and Aerodynamic Performance Analysis of a Canard Box-Wing

					Unmanned Aerial Vehicle (UAV) Platform for Aerial Photography and Surveillance Applications
61	Ukat, Haris B.	MS	Civil Engineering	January 2016	Investigation of Concrete Composite with Water Hyacinth (<i>Eichhornia crassipes</i>)
Mapua University					
62	Alba, Hazel Ena C	MS	Electronics Engineering	1st Quarter 2016-2017	Nitrogen Deficiency Checker of Palay (<i>Oryza sativa</i> L.) Through Leaf Coloration
63	Bigay, Aldren	MS	Electrical Engineering	3rd Quarter 2015-2016	Supply Portfolio Optimization Using Linear Programming and Unit Commitment
64	Bongabong, Edryan D.	MS	Electronics Engineering	2nd Quarter 2016-2017	Implementation of an Android-Based Flood Monitoring System with Wireless Monitoring and Remote Data Accessing Using Flood Models
65	Clemente, Richard	PHD	Materials Science and Engineering	3rd Quarter 2015-2016	Reliability and Material Characterization of Sintered Silver Paste as a Replacement for High Lead Solders in Semiconductor Power Device Attachment
66	Cunanan, Armi M.	PHD	Environmental Engineering	2nd Quarter 2016-2017	Modeling of Laguna Lake Hydrodynamics and Contaminants

					(Ibuprofen & Naproxen) Transport using Environmental Fluids Dynamics Code
67	Dimaunahan , Ericson D.	MS	Electronics Engineering	2nd Quarter 2016-2017	Automated Teller Machine Security for the 4P's Biometric System Using Fingerprint Recognition with Fast-Fourier Transform Image Enhancement and Multi-Stage Minutia Extraction
68	Gonzales, Jose Lorenzo D.	MS	Computer Engineering	2nd Quarter 2016-2017	Adaptive Performance Throttling of General Purpose Processor Using an Integrated Energy Management Unit for Battery- less Wireless Sensor Networks
69	Heredia, Aaron Paulo	MS	Electronics Engineering	4th Quarter 2015-2016	Olfactory Classification using Electronic Nose System via Artificial Neural Network
70	Jauod, Jaylord M.	MS	Environmental Engineering	2nd Quarter 2016-2017	Design and Development of Towed Underwater Platform for Coral Reef Monitoring
71	Leuterio, Daniel Rafael	MS	Electrical Engineering	3rd Quarter 2015-2016	Stability Risk Assessment of Luzon Grid Generation Expansion using Power System Simulation for Engineers Software

72	Lorenzo, Jhunlyn	MS	Electronics Engineering	4th Quarter 2015-2016	Electrochemical Double Layer Capacitor Fractional Order System Model with Parameter Extraction Method
73	Montances, Mark O.	MS	Electronics Engineering	2nd Quarter 2016-2017	Design and Implementation of a Piano Tuning Algorithm based on Actual String Inharmonicity and Sensory Dissonance using MATLAB
74	Pamintuan, Kristopher Ray	MS	Chemical Engineering	4th Quarter 2015-2016	Development of Models for Density and Viscosity of Aqueous Amine Systems from Regular Solution Models
75	Papa, Ervin F.	MS	Environmental Engineering	2nd Quarter 2016-2017	Adsorption of Heavy Metals from Aqueous Solution Using Biochar Derived from Coffee Pulp
76	Reonal, Leizl B.	MS	Electronics Engineering	2nd Quarter 2016-2017	Android-Based Mobile Tracking and Alarm System during Natural Disaster
77	Tan, Christian Martin	MS	Materials Science and Engineering	4th Quarter 2015-2016	Tunable Thermoresponsive Zwitterionic Copolymer grafted onto Polydimethylsiloxane (PDMS)
78	Valino, Arnaldo	MS	Materials Science and Engineering	4th Quarter 2015-2016	Fabrication and Characterization of Abaca-Glass Fiber-Epoxy Hybrid Composites
79	Wong, Reynan	MS	Electronics Engineering	3rd Quarter 2015-2016	Design of a Fuzzy-PID controlled

					Climate Control System for Mushroom Grow-House using an Arduino ATMEGA 2560
University of the Philippines - Diliman					
80	Ali, Mark Rigel R.	MS	Chemical Engineering	May 2016	Effect of Replacement of Silica with Modified and Raw Bentonite on Properties of Natural Rubber Composites
81	Alpaño, Paul Vincent S.	MS	Electrical Engineering	May 2016	Optimizing the Trickle Algorithm of RPL on Dense Wireless Sensor Networks
82	Ancorda, Joanna Lyn D.	MS	Chemical Engineering	May 2016	Soil Organic Matter Dissolution and Biodegradation: Batch Studies
83	Aranas, Romer Kristi Danduan	MS	Geomatics Engineering	May 2016	Linking Land Information Systems in the Philippines Using the Land Administration Domain Model and Open Geospatial Consortium Web Services
84	Botin, Shari Ann S.	MS	Energy Engineering	May 2016	Investigation of $\text{LiFePO}_4/\text{Li}_7\text{La}_3\text{Zr}_2\text{O}_{12}$ Cathode Performance for All-Solid -State Lithium Battery
85	Camacho, Daniel Angelo C.	MS	Energy Engineering	May 2016	Comparison of Layer-Forming and Bromine-Doping Methods of Pentacene Layer in Solid State Dye-Sensitized Solar Cell

86	Galang, Mark Gino K.	MS	Environmental Engineering	May 2016	Estimation of Water Mobile Phones in the Philippines using Neural Networks
87	Gamboa, Ma. Raisa Faye N.	MS	Environmental Engineering	May 2016	Chitosan/Graphene Oxide Composite for the Removal of Lead (II) from Aqueous Solution
88	Garing, Clare L.	MS	Chemical Engineering	May 2016	Effect of Carbon Black Substitution with Modified and Raw Bentonite on the Properties of Natural Rubber Composites
89	Gimpaya, Ruziel Larmae T.	MS	Energy Engineering	May 2016	Synthesis and Characterization of Trivalent Cation Doped Li ₇ La ₃ Zr ₂ O ₁₂ Lithium-ion Conducting Solid Electrolyte
90	Guevara, Hero Paul R.	MS	Environmental Engineering	May 2016	Recovery of Oxalate from Bauxite Wastewater Using Fluidized Bed Process
91	Leuterio, Giselle Lou D.	MS	Chemical Engineering	May 2016	Effect of Colorant and Film Thickness on Diffusion Properties of Oxo- biodegradable Polyethylene Plastic Bags in Different Aqueous Media
92	Lina, Andrew V.	MS	Environmental Engineering	May 2016	
93	Macasieb, Reygie Q.	MS	Environmental Engineering	May 2016	Assessment and Modeling of the Fate and Transport of Mercury in Upper Aguo River

94	Macatulad, Edgardo G.	MS	Geomatics Engineering	May 2016	3DGIS-based Multi-agent Geosimulation Model for Building Evacuation
95	Olegario-Sanchez, Eleanor M.	MS	Materials Science and Engineering	May 2016	Characterization and Copper Modification of Philippine Natural Zeolites for Adsorption of Hydrogen Sulfide Gas
96	Pagkalinawan, Homer M.	MS	Geomatics Engineering	May 2016	Development of a Geospatial Toolkit for Modelling and Assessment of Integrated Land and Sea Use Scenarios of Boracay Island
97	Pajarito, Karen B.	MS	Computer Science	May 2016	IMS-based Specifications for Micro-learning on Mobile Devices
98	Pelicano, Christian Mark O.	MS	Materials Science and Engineering	May 2016	Fabrication of Zinc Oxide Nanostructures on Zinc Foil by Wet Oxidation Method
99	Ramirez, Jar Carlo C.	MS	Chemical Engineering	May 2016	Analysis and Optimization of Water-based Printing Ink Formulations for Polyethylene Films
100	Sablan, Khrizelle Angelique DL.	MS	Environmental Engineering	May 2016	Investigation on the Capacitive Deionization Behavior of Functionalized Carbon Nanotubes (f-CNTs) and Silver-decorated f-CNTs for Water Softening

101	Salinding, Diamaden Jr. T.	MS	Chemical Engineering	May 2016	Thermal, Mechanical and Moisture Absorption Properties of Lignocellulosic Waste (Soda Lignin)/ Unsaturated Polyester Blends
102	Tiangco, Kyle Akio A.	MS	Environmental Engineering	May 2016	Recovery of Calcium from Aqueous Solutions by Fluidized-bed Homogenous Granulation Process
103	Vaso, Christian C.	MS	Materials Science and Engineering	May 2016	Investigation of LSM/YSZ Composites Electrode as Anode Material for Solid Electrolysis Cell (SOEC)
104	Yap, Joseph IV Y.	MS	Energy Engineering	May 2016	Photocatalytic Hydrogen Production on DC Plasma Nitrogen-Doped Titanium Dioxide
105	De Castro, Maria Leah Flor A.	MS	Environmental Engineering	July 2016	Adsorption of Methylene Blue Using EDTA-Modified Philippine Bentonite
106	De Luna, Oliver Dan G.	MS	Energy Engineering	July 2016	Hydrodynamic Modeling and Resource-Device Suitability Analysis of Northern Luzon for Tidal Stream Energy Resource Assessment
107	Encarnacion, Job Immanuel B.	MS	Energy Engineering	July 2016	Analysis of the Effects of CME-Diesel Blends on the Performance and Emissions of

					a Heavy Duty Turbocharged CRDI Engine
108	Esteves, Bryan Edward P.	MS	Electrical Engineering	July 2016	Investigation of a Class J - Tuned Doherty Amplifier
109	Fernandez, Matthew M.	MS	Metallurgical Engineering	July 2016	Electrochemical Investigation of Carbon and Metal-Oxide as Additives to the Negative Electrode of Lead-Acid Battery
110	Mariano, Lizbeth A.	MS	Industrial Engineering	July 2016	Prevalences and Predictive Models of Health Problems among Solid Waste Collectors in Quzon City, Philippines
111	Melchor, Kyle Christopher L.	MS	Electrical Engineering	July 2016	CLEAR: Cluster-Caching for Loop Emendation and Recovery
112	Sedilla, Keneth B.	MS	Industrial Engineering	July 2016	Prevalence, Severity, and Risk Factors of Work-Related Musculoskeletal Disorders (WMSD) Among Stevedores in a Break-Bulk Port Terminal
113	Taaca, Kathrina Lois M.	MS	Materials Science and Engineering	July 2016	Synthesis and Modification of a Chitosan-based Composite by Ag-exchnaged Zeolite Incorporation and Plasma Treatment for Potential Biomedical Application

114	Tajanlangit, Gianina Martha A.	MS	Materials Science and Engineering	July 2016	Fabrication of Montmorillonite/ Polycaprolacton e Nanofiber Membrane vi Electrospinning Method
115	Villaluz, Finella Jianna A.	MS	Environmental Engineering	July 2016	Synthesis of Ammonium Iron (II) Sulfate-doped nano-TiO ₂ Photocatalyst for the Removal of 4- Chlorophenol under Visible Light Irradiation
116	Bernaldez, Isachar P.	MS	Industrial Engineering	December 2016	DEVELOPMENT OF RISK ASSESSMENT TOOL FOR SMALL SCALE GOLD MINING IN THE PHILIPPINES
117	Bueta, Felix Rey C.	MS	Materials Science and Engineering	December 2016	Synthesis and Characterization of NiO/YSZ Composite Cathode Material for Solid Oxide Electrolysis Cell
118	Cuasay, Jodel L.	MS	Energy Engineering	December 2016	Synthesis of Na- Pumice Catalyst for Heterogeneous Transesterification of Soybean Oil: Optimization, Kinetics, and Reusability Studies
119	Cunanan, Maricris C.	MS	Materials Science and Engineering	December 2016	Electrochemical Investigation of Amorphous Silica- Based Anode Materials for Lithium Batteries
120	De Guzman, Mar Francis D.	MS	Electrical Engineering	December 2016	Design Considerations for High- Capacity and

					Wide-Area Messaging Using Bluetooth Technology
121	Go, Raymond John C.	MS	Environmental Engineering	December 2016	Optimization of Coagulation Process for the Removal of Natural Organic Matter (NOM) Characterized by Excitation-Emission Fluorescence Matrix (EEM) via 2Level Full Factorial Design (FFD) Methodology
122	Pare, Meden C.	MS	Electrical Engineering	December 2016	Linearized Thermal Model for Power Transformer's Hourly Top-Oil Temperature Estimation
123	Pescos, Charisse Joy H	MS	Chemical Engineering	December 2016	Synthesis and Characterization of Alginate-Hydroxyethyl Cellulose Microspheres as Drug Delivery System for Naphroxen Sodium
124	Ramoso, John Paolo A.	MS	Electrical Engineering	December 2016	An Autonomous Vehicle Following Fuzzy-Neural Algorithm
125	Sempio, Julius Noah H.	MS	Geomatics Engineering	December 2016	Using remote sensing and GIS for a hydro-meteorology based drought vulnerability map for farmers in Pitpitan, Bulakan, Bulacan

126	Soriano, Maria Marecris U.	MS	Environmental Engineering	December 2016	Phthyoextraction of Copper from Aqueous Solution by Vetiver Grass (Chrysotogon Zizanioides): Study on the Effects of Different Factors
University of the Philippines – Los Baños					
127	Agngarayng ay, Hazel James P.	MS	Agricultural Engineering	June 2016	Temperature Modeling of Carabao Mango (Mangifera indica L.) during Postharvest Heat Treatments"
128	Bagulbagul, Vicki Ann C.	MS	Agricultural Engineering	June 2016	Germination of Sugarcane (<i>Saccharum officinarum</i> L.) Treated with Different Wavelengths of Light with Varying Exposure Times
129	Calanoga, Danica F.	MS	Agrometeorolog y	August 2016	Development of Soil Moisture Index using C- Band Synthetic Aperture Radar
130	Cuevas, Cherry Mae C.	MS	Agricultural Engineering	June 2016	Nitrogen Assessment of Lowland Rice using Altitude Remote Sensing
131	Dorado, Adeliza A.	PhD	Agricultural Engineering	June 2016	Biodegradable Corn Starch- Rice hulk ash Nanocomposite sheets for food packaging applications
132	Duldulao, Michael N.	MS	Agricultural Engineering	June 2016	Development of a Mechanism for Automatic dehusking of coconut (<i>Cocos nucifera</i> L.)
133	Magtoto, Keynty Boy V.	MS	Agricultural Engineering	June 2016	Characterization of Coconut

					(Cocos Nucifera) Shell and its Products from Fluidized Bed Air-steam Gasification
134	Mencede, Rina Fe B.	MS	Agricultural Engineering	June 2016	Potential of using Near Infrared Spectroscopy and Chemometrics in Detecting Sugar Adulteration Honey
135	Ocreto, Melanie B.	PhD	Agricultural Engineering	June 2016	Development of Long term Sweet storage system of Sweet Sorghum (Sorghum bicolor (L.) Moench) Stalks
136	Pantuhan, Guillermo P.	MS	Agricultural Engineering	June 2016	Osmotic dehydration of semi-refined carrageenan: mass transfer kinetics and influence on quality
137	Polinar, Yvonne Q.	MS	Agricultural Engineering	June 2016	Near-Infrared Spectroscopy for Non-Destructive prediction of Maturity and Eating Quality of Carabao Mango (<i>Mangifera Indica</i>)
138	Salcedo, Toni-An Mae C.	MS	Agricultural Engineering	June 2016	Characterization of Torrefied Coconut (Cocos nucifera) Husks and Briquettes
139	Sanchez, Leandro Miguel Angelo	MS	Chemical Engineering	June 2016	Ultrasound assisted Electro-Disinfection Process for the Inactivation of Microbial Contaminants in

					Fruits and Vegetables
140	Visitacion, Glaiza J.	MS	Agricultural Engineering	June 2016	Hyperspectral Vegetation Indices for Water Stress Detection in Rain fed Rice (<i>Oryza sativa</i> L.)
141	Zubia, Omar F.	PhD	PhD Agricultural Engineering	August 2016	Development of coconut husk contractor
University of San Carlos					
142	Lacea, Jaybee E.	MS	Electronics and Communications Engineering	March 2016	A Triangular Waveform Generator Using Switched-Capacitor Scheme Implemented Using 0.18mm CMOS Technology
143	Bongo, Miriam F.	MS	Industrial Engineering	March 2016	A Hybrid Fuzzy Multi-Criteria Decision Making Approach for Mitigating Air Traffic Flow Congestion in an Airport: The Case of ninoy Aquino International Airport
144	Piñero, Lili Andrea J.	MS	Electronics and Communications Engineering	March 2016	Development of a Wireless Sensor Network-Based Electrical Energy Monitoring System for Departments in the School of Engineering at the University of San Carlos
145	Valleser, Jaimerson C.	MS	Electrical Engineering	March 2016	A Techno-economic feasibility Study of the Implementing a Hybrid Renewable Energy Microgrid

					at the PT Bumwi Camp, Amutu Besar, Bintuni Bay, Indonesia
146	Babuyo, Gerion Jay C.	MS	Civil Engineering	March 2016	Composite Action of Web and Topping of Conventionally Reinforced Concrete T-Beams for Beam-and-Block System
147	Añora, Julito Jr. A.	MS	Electrical Engineering	May 2016	Power Output Optimization of a Non-uniformly Illuminated Photovoltaic system Using Dynamic Switching Reconfiguration
148	Acas, Judilyn R.	MS	Electronics and Communications Engineering	May 2016	
149	Wenceslao, Michael Ray S.	MS	Mechanical Engineering	October 2016	Development and Testing of a Lab-Scale Pyrolysis Set-up for High-Density Polyethylene
150	Ylaya, Rogin U.	MS	Civil Engineering	October 2016	Seismic Vulnerability Analysis and Finite Element Modeling of San Guillermo Parish - A Historical Coral Stone Church in Catmon, Cebu, Philippines
151	Solito, Carl Jan M.	MS	Mechanical Engineering	October 2016	Design, Fabrication and Testing of a Vertical Axis Marine Savonius Turbine for Possible Power Generation in Silot Bay, Liloan

ERDT Program Steering Committee

Dr. Josette T. Biyo
Director, Science Education Institute
Department of Science and
Technology

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Dean, College of Engineering
University of the Philippines Diliman
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