



POLYTECHNIC UNIVERSITY OF THE PHILIPPINES  
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I.8. Research outputs are utilized as inputs in:

I.8.1. institutional development



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Research Title	Time Frame	Date of Completion	Researcher/s	Faculty Adviser
Freshwater Aquarium: Automated Water Filtering and Monitoring System with Glass Cleaner	2017-2018	2018	Andrelaine L. Asinas Lemuel Basalo Anthony U. Hernaez Jun Jole O. Ruiz Jr	Dr. Remedios G. Ado Engr. Ronald D. Fernando
An Improved Dryer for Desiccated Coconut	2017-2018	2018	Joyce A. Bersola, Gina R. Gutierrez Dominador B. Pilapil Jr. Mara Yssel D. Rabadon	Dr. Remedios G. Ado Engr. Ronald D. Fernando
Solar Powered Light Post with Ultrasonic Bug Zapper	2017-2018	2018	Darwin C. Borines Krizza Mae R. Cueto Christian Edward S. Dantes Ann Rio R. Pantaleon	Dr. Remedios G. Ado Engr. Ronald D. Fernando
Face Recognition Locker with SMS Notification	2017-2018	2018	Christian Joshua G. Canada Judel Andrew S. Castillo John Christian C. Galela Jayson S. Sevilla	Dr. Remedios G. Ado Engr. Ronald D. Fernando
Automated Jeepney Exhaust Gas Thermolectric Generator Mobile Device Charger with Android Application Monitoring System	2017-2018	2018	John Ariel M. Baygan Rey M. Oronos Jr. Mezzraem M. Delos Reyes Janette L. Emen Edcel D. Maranon	Dr. Remedios G. Ado Engr. Ronald D. Fernando
Automated Mango Shelf Life Preserver and Sterilizer Storage	2017-2018	2018	Alvin Delos T. Santos Miguel T. Mirano John Viane C. Nieva Janine G. Tan	Dr. Remedios G. Ado Engr. Ronald D. Fernando
Direct Sketch-To-Printed Circuit Board Printer	2017-2018	2018	Jasper C. Besmonte Jerome P. Garcia Carl Jhon Steven M. Ignacio Jay Bradley L. Nebre	Dr. Remedios G. Ado Engr. Ronald D. Fernando
Water Hyacinth Harvester Controlled by Android	2017-2018	2018	Quinn Raineer Angelo Dela Cruz	Dr. Remedios G. Ado



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Application with Fiber and Pulp Extraction System			Daniela Airies C. Maravilla Marinette Carla R. Tayag	Engr. Ronald D. Fernando
Development of 3D Map of Selected Buildings of Polytechnic University of the Philippines Utilizing LiDAR System on Quadcopter	2017-2018	2018	Rachel Dee S. Pecio Mae Joyce Anne A. Quinto Danica Mae P. Reginio Juan Miguel V. Manuel	Dr. Remedios G. Ado Engr. Ronald D. Fernando
Arduino-based Fingerprint-Scanning Door Lock with Notification System	2017-2018	2018	Alaica Dawn P. Bonachita Eirrand Km L. Pascual Ramil R. Ramos John Denmark B. Sanchez Ronald D. Fernando Remedios G. Ado	Engr. Florinda H. Oquindo Engr. Julian L. Lorico Jr.
Integration of Renewable Energy Sources using Rice Husk as an Alternative Source of Bioethanol	2017-2018	2018	Ivy T. Balmes Hazel Mae J. Bandillo Rian Justine M. Quingco Joahna Given Uy	Engr. Florinda H. Oquindo Engr. Julian L. Lorico Jr.
SILAW 2.0: A Hybrid Light Buoy System with Modular Powerbank Utilizing Renewable Energy Sources	2017-2018	2018	Jordan Michael M. Baccay Alexzyda D. Gonzalo Reina G. Jancorda Dennis G. Salazar Jr. Orland D. Tubola	Engr. Florinda H. Oquindo Engr. Julian L. Lorico Jr.
Coconut Coir Mixer and Compactor for Hollow Blocks	2017-2018	2018	Mark Alvin M. Bendaña Clyde Jeonell P. Garcia Jedidiah Kirsten Guzman Lovely A. Torres	Engr. Florinda H. Oquindo Engr. Julian L. Lorico Jr.
Liquefied Petroleum Gas Leak Detector with GSM Module using Arduino	2017-2018	2018	Arben John P. Avillanosa Bryan Shane B. Caragan Cedric SA. Sanchez Joard Vince V. Verzosa	Engr. Florinda H. Oquindo Engr. Julian L. Lorico Jr.



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Weight Measurement of Sea Cucumber ( <i>Holothuria Scabra</i> ) Utilizing Image-Based Volume Calculation In An Underwater Condition	2017-2018	2018	Ellen Grace R. Banagan Ryan P. Iraola Camille C. Malaza Charlene O. Quebada Orland D. Tubola	Engr. Florinda H. Oquindo Engr. Julian L. Lorico Jr.
Solar Powered Smart Free-flow Water Network System	2017-2018	2018	Donna Grace S. Espina Abraham A. Faurillo Alexzandra Marie L. Masinda Gil M. Panican Jr. Orland D. Tubola	Engr. Florinda H. Oquindo Engr. Julian L. Lorico Jr.
Solar-Powered Ultrasonic Pest Repellent with Android Application	2017-2018	2018	John Tovi U. Bas Merly Anne C. Cagara Kyle A. Dacaymat Dickon S. Valdez	Engr. Florinda H. Oquindo Engr. Julian L. Lorico Jr.
Portable 3D Laser Scanner with Web-Based Application and Real-Time Output Processing	2017-2018	2018	Aaron B. Alcoba Limmanuel B. Lopez Clifford Jay C. Mamauag Ma. Pamela Z. Patawaran	Engr. Florinda H. Oquindo Engr. Julian L. Lorico Jr.
Automated Hydroponic Irrigation System	2017-2018	2018	Glen Mark P. Baguio Karen Mae P. Mendoza Rochelle R. Mendoza Dyan Krizlen R. Rioflorida	Engr. Florinda H. Oquindo Engr. Julian L. Lorico Jr.
Semi-Automated Corn Cobs Shredder and Bio-Briquette Maker	2017-2018	2018	Christian R. Longos Archie D. Miranda Nathaniel I. Quierrez Justin Kyle Marvin A. Quitasol	Dr. Arvin R. De La Cruz Engr. Pedrito M. Tenerife Jr.
Automated Dried Water Hyacinth ( <i>Eichhornia crassipes</i> ) Parenchyma Remover and Scraper	2017-2018	2018	Hyrum D. Agudo Limuel M. Calatin Dominic D. Carlos Eriel Louise D. Chavez	Dr. Arvin R. De La Cruz Engr. Pedrito M. Tenerife Jr.
Automated Oil Extractor Utilizing Talisay ( <i>Terminalia catappa</i> ) Kernel as a Source of Biodiesel	2017-2018	2018	Tiffany C. Domugho Krystian Neil R. Menguito Julio M. Nervar	Dr. Arvin R. De La Cruz Engr. Pedrito M. Tenerife Jr.

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Wireless Sensor Network for Sewerage Monitoring	2017-2018	2018	Reinier Von P. Verian Franchette Suzzaine Buray Stephanie Pasicolan Orlando Punzalan <sup>1</sup> Jr. Gilbert Ramos	Dr. Arvin R. De La Cruz Engr. Pedrito M. Tenerife Jr.
Location and Time-Based Dual Axis Solar Tracking System for Efficient Solar Energy Conversion Implemented in Raspberry Pi 3	2017-2018	2018	Seth Joshua C. Acuin Arvin R. De La Cruz John Ace B. Donato Paul Christian P. Remerata Laira T. Salvado	Dr. Arvin R. De La Cruz Engr. Pedrito M. Tenerife Jr.
Banana Fiber Decorticator with Wringer	2017-2018	2018	Alexis Christellene M. Arce Kathleen Meriel D. Ortega Ma. Arianne N. Pabularcon Ralph Lorenz R. Rafallo	Dr. Arvin R. De La Cruz Engr. Pedrito M. Tenerife Jr.
Monitoring System with Hybrid Photobioreactor for Biomass Production of Spirulina Plantensis SP.	2017-2018	2018	Jan Lennard A. Augusto Tracey C. Cabacaba Ann Maekylah N. Paiton Mary Margarette L. Velasquez Armin S. Coronado Orland D. Tubola	Dr. Arvin R. De La Cruz Engr. Pedrito M. Tenerife Jr.
Image-Based Microalgae Cell Identifier and Counter Implemented in Raspberry Pi	2017-2018	2018	Wilgefortiz P. Catchillar Dannah Louise L. Gabuni Nathaniel Lewis Galang Adrienne Paule M. Langit Orland D. Tubola	Dr. Arvin R. De La Cruz Engr. Pedrito M. Tenerife Jr.
Anti-Plagiarism Device Using PyTesseract Optical Character Recognition Technology and PlagScan	2017-2018	2018	Ronel Z. Galon Romeo G. Gatcheco III Nancy D. Malgapo Joseph Adrian R. Sayno	Engr. Julius S. Cansino Engr. Rolito L. Mahaguay
Aquaculture System for Silver Perch ( <i>Leiopotherapon plumbeus</i> ) using Media-based Aquaponics for BFARNIFTC,	2017-2018	2018	Teejay Jamlang Daniel James Punzalan Roman Tristan Pol	Engr. Julius S. Cansino Engr. Rolito L. Mahaguay



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Tanay, Rizal			Angelo Nichol Suinan	
Boarding House for Rent Finder for Student Boarders with Android Application	2017-2018	2018	Randell O. Arga	Engr. Julius S. Cansino Engr. Rolito L. Mahaguay
Fish Detector and Luring System with Global Positioning System (GPS)	2017-2018	2018	Reynell C. Bobihis Christine Ann O. Buyoc John Edward D. Narra Jan Reuelle P. Tefia Cedrix B. Tumlos	Engr. Julius S. Cansino Engr. Rolito L. Mahaguay
Smart Anti-Carjack Module Using Internet of Things Technology	2017-2018	2018	Jolesa O. Cerbito Ejay L. Jacob Athena Mariel Angela G. San Jose Mary Grace R. Tafia	Engr. Julius S. Cansino Engr. Rolito L. Mahaguay
Coco-net Weaving Machine	2017-2018	2018	Elijah B. De Castro Irish D. Jamili Felrose M. Payas Jayson E. Quitain	Engr. Julius S. Cansino Engr. Rolito L. Mahaguay
Multi-Layered Automatic Flour Sifter	2017-2018	2018	Justine S. Crisostomo Lenarey S. Torrit Joshua Daniel C. Tubalinal	Engr. Julius S. Cansino Engr. Rolito L. Mahaguay
Solar-powered Multipurpose Vendo Cart for Small Scale Businesses	2017-2018	2018	Mark Paulo A. Cube Mark B. Hernandez Benito S. Mascariñas Jr. Jayvin O. Velayo	Engr. Julius S. Cansino Engr. Rolito L. Mahaguay
The Development of Autonomous Earthquake Response Drone and Mapping of Search Resilience Operations	2017-2018	2018	Raniel Christian M. Agno Marc Rendell M. Ching Roger Louisse L. Eustaquio Patrick L. Gomez	Engr. Julius S. Cansino Engr. Rolito L. Mahaguay
Vertical Aeroponics System	2017-2018	2018	Nomer R. Aringo Christine Joy C. Cayona Rachelle Anne G. De Villa Neil Adriane H. Sangalang	Engr. Julius S. Cansino Engr. Rolito L. Mahaguay

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Portable Microcontroller-Based Water Quality Assessor of Effluent Septic Tank Chamber of San Juan River	2017-2018	2018	Rafael Christian S. Aguilar Daryl Don A. Arce Reynaldo A. Ilagan Nica Chloie G. Yecla	Engr. Ferdinand O. Natividad Dr. Antonio Y. Velasco
Removal of Water Hyacinth through the Use of Unmanned Water Vehicle	2017-2018	2018	Eleazar R. Año Jon Rhozze P. De Jesus Aldrin N. De Ramos Prince Deozel M. Espiritu	Engr. Ferdinand O. Natividad Dr. Antonio Y. Velasco
Automated Production of Effective Microorganisms – Mudballs for Possible Ecological Imbalance and Polluted Bodies of Water	2017-2018	2018	Princess Nicole Bacay Judylene U, Gabia Abigail D. Macasinag Jennilene A. Poi	Engr. Ferdinand O. Natividad Dr. Antonio Y. Velasco
Paper Recycling Automation Device for Pot Paper Mache Business Using Android Application	2017-2018	2018	John Jerald G. Bautista Neil Carlo B. Del Mundo Jessieca B. Diano Lloyd G. Gabriel	Engr. Ferdinand O. Natividad Dr. Antonio Y. Velasco
Microcontroller-based Compost Making Machine utilizing Biodegradable Waste	2017-2018	2018	Ephraim Joel M. Capistrano Jerwin Russell Esmalla Joseph R. Lat Kenneth M. Lobaton	Engr. Ferdinand O. Natividad Dr. Antonio Y. Velasco
Remote Controlled Harvesting Machine for Lemongrass (TANGLAD)	2017-2018	2018	Kimberly S. Buñag Nikko O. De Vera John Karl L. Malabanan Kevin Red B. Salamat Miguel S. B. Turqueza	Engr. Ferdinand O. Natividad Dr. Antonio Y. Velasco
Balut Processing Mechanism for the Philippine Balut Industry with Short Message Service (SMS) Alert Monitoring System	2017-2018	2018	Jazz Joel D.G. Alvarez Jason Edward V. Bio Rofherson C. Suzon Rovien P. Vargas	Engr. Ferdinand O. Natividad Dr. Antonio Y. Velasco
Automated Ferry Ticketing System with Corresponding Android Application	2017-2018	2018	Ryan G. Baronia Mark Joshua O. Francisco John Israel M. Mesajon	Engr. Ferdinand O. Natividad Dr. Antonio Y. Velasco

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Arduino-Based Solution Coated Fruits and Vegetables Machine for Food Preservation	2017-2018	2018	Rick Anthony E. Policarpio Franciss Marie A. Busalpa Clarisse I. Ibasco John Peter F. Mendoza Rollen Joy S. Nabia	Engr. Ferdinand O. Natividad Dr. Antonio Y. Velasco
ROGER: Rescuer On Go Emergency Reduction – Android Based Locator Application Utilizing Indoor Positioning System (IPS) For Polytechnic University Of The Philippines	2017-2018	2018	Christine Joyce P. Llanes Merynelle D. Lopez Dale Ivan M. Merza Hanah Mae P. Zamora	Engr. Ferdinand O. Natividad Dr. Antonio Y. Velasco

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A Virtual Private Network – Based Water Quality Monitoring System For Sea Cucumber	2016-2017	2017	Raymond Y. Leabres, Rey-Dante A. Montero, Crescel Charmaine DG. Nudalo, Sharaina Mae Prudenciado	Engr. Pedrito M. Tenerife
Air Quality Manager For Portable Toilets Controllable via Microcontroller-Based Remote Control	2016-2017	2017	John Israel O. Aquino, Lerry Joy DC. Cabanding, Keene S. Clavecilla, Hobie Manvel T. Gamponia, Jonas C. Macatangay	Dr. Antonio Y. Velasco, Engr. Ferdinand O. Natividad
Automated Adhesive Maker Using Pine Tree Sap	2016-2017	2017	Rowan T. Camagay, Ralph Paolo V. Gabatino, Louise M. Nunez, Cesar Allen M. Suba	Dr. Antonio Y. Velasco, Engr. Ferdinand O. Natividad
Automated Bioethanol Fermentor from Pineapple Peel Extract with Monitoring System	2016-2017	2017	Justin Christopher B. Estorga, Ivy Marie G. Porras, Shanilyn Louise G. Santiago, Lleur R. Tan	Engr. Julius S. Cansino, Engr. Ronald D. Fernando
Automated Brick Maker from Pet Bottles and Coconut Husks	2016-2017	2017	Juan Paulo S. Escario, Hannah Lae M. Francisco, Jake Lester B. Gatchalian, Karen Ann S. Lameresia	Dr. Antonio Y. Velasco, Engr. Ferdinand O. Natividad
Automated Dishwasher for PUP Canteen	2016-2017	2017	Ariane D. Aquino, Alexander M. Casabuena Jr, Pia Salve Alexis C. Dayao, Van Erick A. Mangaoang	Dr. Antonio Y. Velasco, Engr. Ferdinand O. Natividad
Automated Dog Feeder with Monitoring System and Mobile Application	2016-2017	2017	Angela D. Milallos, Roemar D. Pajaron, Akira Kim H. Soriano	Dr. Remedios G. Ado, Engr. Julian L. Lorico Jr.
Automated Glass Wall Cleaner	2016-2017	2017	Melvin G. Ampit, Analie B. Moreno, Jan Socorro A. Policarpio, Alfonso T. Suarez	Dr. Remedios G. Ado, Engr. Julian L. Lorico Jr
Automated Gluten-Free Banana Flour Maker	2016-2017	2017	John Elijah B. De Asis, Neryl Anne B. Empenio, Pierangelo P. Martin, Francesca B. Villasanta	Dr. Remedios G. Ado, Engr. Julian L. Lorico Jr.
Automated Grinder, Boiler And Strainer For Soymilk and Silken Tofu Maker	2016-2017	2017	Jayvee G. Asuncion, Romina Shaye V. Banadera, Warren Mae A. Bernabe, Sheila Victoria C. Siongco	Dr. Remedios G. Ado, Engr. Julian L. Lorico Jr.
Automated Irrigation System	2016-2017	2017	Mary Joyce D. Cruzado, Aira May G. Cueto, Jan Errand C. Del Rosario, Darlyn P. Marcelo	Dr. Antonio Y. Velasco, Engr. Ferdinand O. Natividad
Automated Longganisa Maker	2016-2017	2017	Nina GERALYN R. Palambiano, Mary Andrea L. Ricafuerte, Paul Aldrin P. Roque, Jefferson T. Tonic	Engr. Julius S. Cansino, Engr. Julian L. Lorico Jr.



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Automated Steamed Rice Maker	2016-2017	2017	Mark Angelo J. Borillo, Dayle C. Dantes, Jano B. Omugtong, John Michael M. Soliven	Engr. Florinda H. Oquindo, Engr. Julian L. Lorico Jr.
Automated Water -Based and Acrylic Paint Color Mixer with Object Color Scanner	2016-2017	2017	Ryan Gabriel S. Bunquin, Roselyn R. Cañete, Rose Suzette M. Lapitan, Michael B. Villaverde	Engr. Julius S. Cansino, Engr. Ronald D. Fernando
Autonomous Disaster Risk Response Drone Built on Top of Aktyon Sentral Platform	2016-2017	2017	William B. Caballero Jr, Francisc Jerhone E. Camillo, Shella May B. Cantos, Christian Ashley P. Mones	Engr. Julius S. Cansino, Engr. Ronald D. Fernando
Bus Passenger Monitoring And Ticketing System Using RFID	2016-2017	2017	Rodemar John A. Aguilar, Arjay C. Dala, Peach F. Dapitan, Arrah Shaine L. Lumbreras	Dr. Remedios G. Ado, Engr. Julian L. Lorico Jr.
Development of Low-Cost Lidar System Utilizing Quadcopter as UAV (Unmanned Aerial Vehicle) for 3D Building Model Reconstruction	2016-2017	2017	Wency T. Burlat, Dan Jewele R. Sanchez, Jelony M. Sobremisana, Jan Carlo G. Urminita	Engr. Pedrito M. Tenerife
Eye Berry Pi: Gate Security with Implementation of Deep Learning Facial Recognition	2016-2017	2017	Martin John R. Lopez, Emmanuel G. Nipal, Dave Robert E. Torrente, Jovani C. Warguez	Dr. Remedios G. Ado, Engr. Julian L. Lorico Jr.
Fish Cages Lighting System in Alaminos, Pangasinan Utilizing Hydropower, Saltwater and Solar Hybrid Renewable Energy Resources	2016-2017	2017	Lawrence M. Ignacio, Karen P. Landoy, Dave Allen B. Motea, Argene G. Rafael	Engr. Pedrito M. Tenerife Jr.
Fish Finder via Android Application	2016-2017	2017	Gadfrey Ajerico T. Sumague, John Jay C. Barcela, Jason D. Elano, Paul Roger D. Enriquez	Engr. Rolito L. Mahaguay, Engr. Florinda H. Oquindo
Free Energy Generator for Neodymium Magnet For Charging Mobile Devices	2016-2017	2017	Jervin L. Carlos, Jarmaine Faye A. Geda, Drexler Ceasar M. Jose, Ian Kristopher A. Santos	Engr. Florinda H. Oquindo, Engr. Rolito L. Mahaguay
Fruit And Vegetable E-Slicer	2016-2017	2017	Christian Jay G. Aligega, Jason L. Conception, John Benedict G. Dimalaluan, Rose S. Fortaliza	Engr. Florinda H. Oquindo, Engr. Rolito L. Mahaguay
Google Map-Based Restaurant/Food Chain Finder Android Application	2016-2017	2017	Cyrille T. Ablaza, Janine D. Buarao	Engr. Julius S. Cansino, Engr. Ronald D. Fernando
Greywater Filtration System for Household Laundry with Water Quality Monitoring	2016-2017	2017	Maricar C. Bahaya, Dan Andre A. Camacho, Melvin B. Rabadon, Joanah Marie G. Ramos	Engr. Pedrito M. Tenerife

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Instagrind Fresh Ground Coffee From Roasting To Grinding	2016-2017	2017	Jobelle H. San Juan, Diane Christelle S. Sismundo, Airianee Jasmine D. Tanyag, Danica Faye SA Villanueva	Dr. Remedios G. Ado, Engr. Julian L. Lorico Jr
Intelligent Wireless Greenhouse Climate Management System for Strawberry Production	2016-2017	2017	Patric Ian N. Esposito, Alvin M. Lipara, Jerico P. Sangrador, Jayraid O. Teberio	Engr. Pedrito M. Tenerife
MCU - Based Soil Monitoring System	2016-2017	2017	Adler Ken B. Bulado, Royce Ivan F. Fadriquela, Giancarlo M. Javier, Charles Marco H. Salen	Dr. Antonio Y. Velasco, Engr. Ferdinand O. Natividad
MCU-Based Steam Iron	2016-2017	2017	Rish Joy O. Del Rosario, Serjay S. Ilaga, Tello O. Tamayo, Jocelle L. Tanqui-on	Dr. Remedios G. Ado, Engr. Julian L. Lorico
Mosquito Repellent Mistng System	2016-2017	2017	janea Chris S. Agupitan, Jess Vincent C. Redula, Jomelle F. Taduran, Kimberly D. Villajuan	Engr. Florinda H. Oquindo, Engr. Rolito L. Mahaguay
Piso Voting Kiosk with Databased Powered by Cloud Technology	2016-2017	2017	Jose Renzo D. Bainco, Bea Aira Lee S. Corpuz, Angela Rose C. Divva, Romar V. San Juan	Dr. Remedios G. Ado, Engr. Julian L. Lorico Jr.
Sign Language: A Non-Signers' Guide Through Hand Movement Analysis and Face Recognition	2016-2017	2017	Anthony Louise P. Balon, Carl C. Cortina, Neriell P. Mallari, Jervin A. Mandapat	Dr. Antonio Y. Velasco, Engr. Ferdinand O. Natividad
Smartphone Message Converter to Braille Display with Voice Synthesizer	2016-2017	2017	Geane Marie Karla N. Figueroa, Maverick B. Linget, Marie Carissa B. Mantala, Jennifer J. Tolentino	Dr. Antonio Y. Velasco, Engr. Ferdinand O. Natividad
The Development of a Sound Frequency Attract-To-Kill Mosquito Device	2016-2017	2017	Chrizz C. Cabajes, Ron Sarte R. Guardo, Roi Joshua D. Timoteo, Richard B. Velonza Jr.	Engr. Rolito L. Mahaguay, Engr. Florinda H. Oquindo
The Generation of Cathode utilizing Carbonized Egg Shell in Replacement to Manganese Dioxide in Battery Production	2016-2017	2017	Johnuel C. Espiritu, Aira F. Ramel, April Rose D. Rosauo, Danica Rose U. Santos	Engr. Florinda H. Oquindo, Engr. Rolito L. Mahaguay
The Movable Rat Trapping And Exterminating System	2016-2017	2017	Geneva B. Cudal, Jefferson A. Danilla, Roel G. Dayor Jr., Renzel A. Delos Santos	Engr. Florinda H. Oquindo, Engr. Rolito L. Mahaguay

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Automated Steamed Rice Maker	2016-2017	2017	Mark Angelo J. Borillo, Dayle C. Dantes, Jano B. Omugtong, John Michael M. Soliven	Engr. Florinda H. Oquindo, Engr. Julian L. Lorico Jr.
Automated Water -Based and Acrylic Paint Color Mixer with Object Color Scanner	2016-2017	2017	Ryan Gabriel S. Bunquin, Roselyn R. Cañete, Rose Suzette M. Lapitan, Michael B. Villaverde	Engr. Julius S. Cansino, Engr. Ronald D. Fernando
Autonomous Disaster Risk Response Drone Built on Top of Aksyon Sentral Platform	2016-2017	2017	William B. Caballero Jr, Francisc Jerhone E. Camillo, Shella May B. Cantos, Christian Ashley P. Mones	Engr. Julius S. Cansino, Engr. Ronald D. Fernando
Bus Passenger Monitoring And Ticketing System Using RFID	2016-2017	2017	Rodemar John A. Aguilar, Arjay C. Dala, Peach F. Dapitan, Arrah Shaine L. Lumbreras	Dr. Remedios G. Ado, Engr. Julian L. Lorico Jr.
Development of Low-Cost Lidar System Utilizing Quadcopter as UAV (Unmanned Aerial Vehicle) for 3D Building Model Reconstruction	2016-2017	2017	Wency T. Burlat, Dan Jewele R. Sanchez, Jelony M. Sobremisana, Jan Carlo G. Urminita	Engr. Pedrito M. Tenerife
Eye Berry Pi: Gate Security with Implementation of Deep Learning Facial Recognition	2016-2017	2017	Martin John R. Lopez, Emmanuel G. Nipal, Dave Robert E. Torrente, Jovani C. Warguez	Dr. Remedios G. Ado, Engr. Julian L. Lorico Jr.
Fish Cages Lighting System in Alaminos, Pangasinan Utilizing Hydropower, Saltwater and Solar Hybrid Renewable Energy Resources	2016-2017	2017	Lawrence M. Ignacio, Karen P. Landoy, Dave Allen B. Motea, Argene G. Rafael	Engr. Pedrito M. Tenerife Jr.
Fish Finder via Android Application	2016-2017	2017	Gadfrey Ajerico T. Sumague, John Jay C. Barcelá, Jason D. Elano, Paul Roger D. Enriquez	Engr. Rolito L. Mahaguay, Engr. Florinda H. Oquindo
Free Energy Generator for Neodymium Magnet For Charging Mobile Devices	2016-2017	2017	Jervin L. Carlos, Jarmaine Faye A. Geda, Drexler Ceasar M. Jose, Ian Kristopher A. Santos	Engr. Florinda H. Oquindo, Engr. Rolito L. Mahaguay
Fruit And Vegetable E-Slicer	2016-2017	2017	Christian Jay G. Aligega, Jason L. Conception, John Benedict G. Dimalaluan, Rose S. Fortaliza	Engr. Florinda H. Oquindo, Engr. Rolito L. Mahaguay
Google Map-Based Restaurant/Food Chain Finder Android Application	2016-2017	2017	Cyrille T. Ablaza, Janine D. Buarao	Engr. Julius S. Cansino, Engr. Ronald D. Fernando
Greywater Filtration System for Household Laundry with Water Quality Monitoring	2016-2017	2017	Maricar C. Bahaya, Dan Andre A. Camacho, Melvin B. Rabadon, Joanah Marie G. Ramos	Engr. Pedrito M. Tenerife

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Instagrind Fresh Ground Coffee From Roasting To Grinding	2016-2017	2017	Jobelle H. San Juan, Diane Christelle S. Sismundo, Airianee Jasmine D. Tanyag, Danica Faye SA Villanueva	Dr. Remedios G. Ado, Engr. Julian L. Lorico Jr
Intelligent Wireless Greenhouse Climate Management System for Strawberry Production	2016-2017	2017	Patric Ian N. Esposito, Alvin M. Lipara, Jerico P. Sangrador, Jayrald O. Teberio	Engr. Pedrito M. Tenerife
MCU - Based Soil Monitoring System	2016-2017	2017	Adler Ken B. Bulado, Royce Ivan F. Fadriquela, Giancarlo M. Javier, Charles Marco H. Salen	Dr. Antonio Y. Velasco, Engr. Ferdinand O. Natividad
MCU-Based Steam Iron	2016-2017	2017	Rish Joy O. Del Rosario, Serjay S. Ilaga, Tello O. Tamayo, Jocelle L. Tanqui-on	Dr. Remedios G. Ado, Engr. Julian L. Lorico
Mosquito Repellent Misting System	2016-2017	2017	janea Chris S. Agupitan, Jess Vincent C. Redula, Jomelle F. Taduran, Kimberly D. Villajuan	Engr. Florinda H. Oquindo, Engr. Rolito L. Mahaguay
Piso Voting Kiosk with Databased Powered by Cloud Technology	2016-2017	2017	Jose Renzo D. Bainco, Bea Aira Lee S. Corpuz, Angela Rose C. Divva, Romar V. San Juan	Dr. Remedios G. Ado, Engr. Julian L. Lorico Jr.
Sign Language: A Non-Signers' Guide Through Hand Movement Analysis and Face Recognition	2016-2017	2017	Anthony Louise P. Balon, Carl C. Cortina, Neriell P. Mallari, Jervin A. Mandapat	Dr. Antonio Y. Velasco, Engr. Ferdinand O. Natividad
Smartphone Message Converter to Braille Display with Voice Synthesizer	2016-2017	2017	Geane Marie Karla N. Figueroa, Maverick B. Linget, Marie Carissa B. Mantala, Jennifer J. Tolentino	Dr. Antonio Y. Velasco, Engr. Ferdinand O. Natividad
The Development of a Sound Frequency Attract-To-Kill Mosquito Device	2016-2017	2017	Chrizz C. Cabajes, Ron Sarte R. Guardo, Roi Joshua D. Timoteo, Richard B. Velonza Jr.	Engr. Rolito L. Mahaguay, Engr. Florinda H. Oquindo
The Generation of Cathode utilizing Carbonized Egg Shell in Replacement to Manganese Dioxide in Battery Production	2016-2017	2017	Johnuel C. Espiritu, Aira F. Ramel, April Rose D. Rosauero, Danica Rose U. Santos	Engr. Florinda H. Oquindo, Engr. Rolito L. Mahaguay
The Movable Rat Trapping And Exterminating System	2016-2017	2017	Geneva B. Cudal, Jefferson A. Danilla, Roel G. Dayor Jr., Renzel A. Delos Santos	Engr. Florinda H. Oquindo, Engr. Rolito L. Mahaguay

Prepared by:

  
 Pedrito M. Tenerife Jr.



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PC I.8

Republic of the Philippines  
DEPARTMENT OF SCIENCE AND TECHNOLOGY  
PHILIPPINE COUNCIL FOR INDUSTRY, ENERGY AND EMERGING  
TECHNOLOGY RESEARCH AND DEVELOPMENT  
4th and 5th Levels, Science Heritage Building, Bicutan, Taguig City

**MEMORANDUM OF AGREEMENT**

Project Title: *Novel Material as Anode Cathode Electrode for Power Generator Al-Air Reactor*

PCIEERD Project No.: 07319

KNOWN ALL MEN BY THESE PRESENTS:

This MEMORANDUM OF AGREEMENT ("Agreement") is made and entered into by and between:

The PHILIPPINE COUNCIL FOR INDUSTRY, ENERGY AND EMERGING TECHNOLOGY RESEARCH AND DEVELOPMENT (PCIEERD), a government agency under the Department of Science and Technology (DOST) created pursuant to the approved rationalization plan in accordance with the provision of Executive Order No. 366, hereinafter referred to as "DOST-PCIEERD", the Funding/Monitoring Agency, with principal office at 4th and 5th Levels, Science Heritage Building, Bicutan, Taguig City, Metro Manila, Philippines represented in this Agreement by its Executive Director, **DR. ENRICO C. PARINGIT**;

-and-

The POLYTECHNIC UNIVERSITY OF THE PHILIPPINES, a state university governed by the Board of Regent in accordance with provision of Presidential Decree No. 1341, hereinafter referred to as UNIVERSITY with main address at A. Mabini Campus, Anonas Street, Sta. Mesa Manila represented in this Agreement by its President, **DR. EMANUEL C. DE GUZMAN**, herein referred to as the Implementing Agency.

WITNESSETH:

*WHEREAS*, the above-mentioned research and development (R&D) project hereinafter referred to as the Novel Material as Anode and Cathode Electrode for Power Generator Al-Air Reactor has been thoroughly evaluated by DOST-PCIEERD and was duly approved by the PCIEERD Governing Council in its 93<sup>rd</sup> meeting on 08 April 2019 through GC Resolution No. 27, series of 2019;

*NOW THEREFORE*, for and in consideration of the foregoing premises, the PARTIES hereby agree to the following terms and conditions:



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**I. OBJECTIVES OF THE PROJECT**

1. To develop a novel material as anode electrode for Aluminum-air-based battery
2. To characterize the developed electrode physical and electrochemical property
3. To design and fabricate a working prototype Al-air-based battery pack utilizing the developed anode electrode so as to evaluate its energy generation performance.
4. To test the developed Al-air-based battery pack for actual utilization as battery for electric bicycle, smart phone charger and battery for DC lighting system

**II. OPERATION OF THE PROJECT**

The Project shall be undertaken by the **UNIVERSITY** in accordance with the approved project proposal (made part hereof as Annex "A") and the Revised DOST-GIA Guidelines (A.O. 009 S. of 2017).

**III. FUNDING ASSISTANCE**

The **DOST-PCIEERD** shall provide grant in the amount of Ten Million Three Hundred Twenty Nine Thousand Six Hundred Forty Six Pesos (Php 10,329,646.00) for two (2) years with an initial Year 1 grant of Seven Million Four Hundred Ninety Seven Thousand Three Hundred Twenty Three Pesos (Php 7,497,323.00) to be expended based on the scheduled release of funds and as allocated in the approved Project Line-Item Budget (made part hereof as Annex "B"). Guidelines on the Grants-in-Aid Program as may be determined by the **DOST-PCIEERD** shall govern the implementation of the Project.

The activities, operation of books of accounts and records of the projects shall be subject to reasonable inspection by authorized representatives of **DOST-PCIEERD**. The **DOST-PCIEERD** reserves the right to discontinue the projects or its assistance at any time for cause as determined by the **DOST-PCIEERD**, to include but not be limited to, violation of the Grant Agreements, fraud or falsity in the **UNIVERSITY**'s warranties and representation as provided by the proponent or upon determining that the results which were obtained or reasonably expected do not justify further activity.

All income/interest derived from the program/projects, if any, and all unexpended balance shall be reported immediately and remitted to **DOST-PCIEERD** by the **UNIVERSITY** after the termination of the program/projects.

**IV. PROJECT DURATION**

The Project shall be completed within a period of twenty four months with the Year 1 implementation covering the period 01 June 2019 to 31 May 2020. Parties shall agree on the starting date of implementation, which shall not be later than the date of receipt of funds by the **UNIVERSITY**.





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#### V. FUND RELEASE AND UTILIZATION

The financial grant shall be released by the **DOST-PCIEERD** to the **UNIVERSITY**, subject to applicable rules and regulations and availability of funds.

The **UNIVERSITY** shall abide by the applicable rules and regulations on disbursement and utilization as mandated by the **DOST-PCIEERD** and existing government accounting and auditing rules and regulations, to include in particular but not be limited to, rules on direct and indirect costs.

#### VI. PROJECT PROPERTIES

*Project References:* Mention of above-stated project in any and all publication, literature and information material in whatever media form shall state reference to the **DOST-PCIEERD** as project Funding/Monitoring Agency, and **UNIVERSITY** as the Implementing Agency. Failure on the part of any party to comply with this provision shall be ground for written documented protest; further, repeated non-compliance with this provision by one party shall allow the aggrieved party to inform affected third parties in writing and require proper attribution through publication, with cost charged against the offending party.

*Intellectual Property (IP):* Ownership and utilization of IPs and Intellectual Property Rights (IPRs) resulting from the project shall be governed by the Philippine Technology Transfer Act of 2009. The **UNIVERSITY** and the Project Leader acknowledge that they have read, understood and hereby agree to be bound by the provisions of the said Act. In case of conflict with other laws, rules or regulations, the said Act shall prevail.

*Records of Equipment:* The Property Officer/s of the **DOST-PCIEERD** and **UNIVERSITY** shall maintain a complete and updated record of all equipment purchased out of the grant funds. Inventory of equipment shall be conducted by the **DOST-PCIEERD** during the implementation of the project.

*Ownership of Equipment:* The **DOST-PCIEERD** shall initially own all equipment, including but not limited to the fabricated equipment, under its account until it may deem fit to transfer the same to other projects or implementing institutions, subject to existing government accounting and auditing rules. The **UNIVERSITY** shall be accountable for the equipment duly receipted until the physical transfer/donation or disposition of ownership, as determined by the **DOST-PCIEERD**.

Upon request, the ownership of equipment may be transferred subject to the approval from **DOST-PCIEERD**. The **DOST-PCIEERD** reserves the right to transfer ownership of such government equipment subject to existing government accounting and auditing laws, rules and regulations.

#### VII. ACCOMPLISHMENT AND FINANCIAL REPORTS

The **UNIVERSITY** shall submit to the **DOST-PCIEERD** all technical and financial reports as mandated by the **DOST-PCIEERD**, pursuant to applicable rules and regulations. The



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UNIVERSITY shall likewise acknowledge the assistance of the DOST-PCIEERD in relevant project-related activities.

#### VIII. GENERAL PROVISIONS

*Amendment:* This Agreement may only be amended in writing and by mutual consent of both parties.

*Authority to Sign:* Each person signing this agreement represents and warrants that he/she is duly authorized to sign this agreement. In the unlikely event that the person signing for the other party is not authorized to do so, the latter agrees to hold the other party/ies harmless for any cause or consequence of the absence/lack of authority to sign.

*Arbitration:* All disputes arising between and among the parties as to interpretation, operation or effect of any clause in the Agreement or any other difference between the parties shall first be resolved amicably. In case of failure, the Rules on Alternative Dispute Resolution (ADR) between national government agencies under Republic Act No. 9285 shall apply.

*Indemnification:* Each party shall indemnify, hold free and harmless, and defend at its own expense the other party/ies from and against all suits, claims, demands, and liabilities of any nature or kind, arising out of acts or omissions of the former, in the performance of any activity in connection with the program/project, including those that may be initiated by its employees, workers, agents, subcontractors, or by any other entity or persons against said party by reason of or in connection to the program/project.

*Venue:* The parties further agree that in case of legal action requiring court litigations that may arise in the enforcement of this Agreement, the venue of court litigation shall be in the Court of Competent Jurisdiction sitting in Taguig City only.

*Separability Clause:* If any part or provision of this Agreement is held invalid or unconstitutional, the other provisions not affected thereby shall remain in force and in effect.

#### IX. COMPLIANCE WITH LAWS AND POLICIES

The UNIVERSITY shall comply with the provisions of the Philippine Technology Transfer Act of 2009 (Republic Act No. 10055) and its Implementing Rules and Regulations (Joint DOST-IPO Administrative Order No. 02-2010), Guidelines on Intellectual Property Valuation, Commercialization and Information Sharing (Joint DOST-DTI-IPOPHL A.O. No. 001 s. 2012), DOST Intellectual Property Policy (DOST A.O. No. 004 s. 2015), Technology Transfer Protocol (DOST A.O. No. 009 s. 2015), Intellectual Property Management Protocol (DOST A.O. No. 004 s of 2016), Guidelines on the Constitution of the Fairness Opinion Board (FOB) and the Issuance of Fairness Opinion Report (FOR) under R. A. No. 10055 (DOST Memorandum Circular No. 003 s. of 2015), Guidelines on the Fast-Tracked Issuance of FOR under R. A. No. 10055 (DOST M. C. No. 007, s. of 2016), Adoption of the DOST Data Sharing Policy (DOST A. O. No. 003 s. of 2015) and its Implementing Guidelines, the DOST Administrative Order No. 009 Series of 2017 (Revised DOST-GIA Guidelines) and other government laws, rules and policies as applicable.



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IN CONSIDERATION of the mutual covenant set forth above, witness our signatures  
this \_\_\_\_\_ day of \_\_\_\_\_, 2019, at \_\_\_\_\_, Philippines.

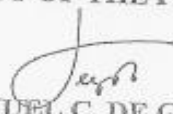
**Funding/Monitoring Agency:**

**PHILIPPINE COUNCIL FOR INDUSTRY, ENERGY, AND EMERGING  
TECHNOLOGY RESEARCH AND DEVELOPMENT COUNCIL**

  
**DR. ENRICO C. PARINGIT**  
Executive Director, DOST-PCIEERD

**Implementing Agency:**

**POLYTECHNIC UNIVERSITY OF THE PHILIPPINES – STA. MESA**


  
**DR. EMANUEL C. DE GUZMAN**  
President, PUP- Sta. Mesa

**WITNESS:**

  
**DR. GINNO L. ANDRES**  
Project Leader, PUP – Sta. Mesa

  
**NONILO A. PEÑA**  
Chief SRS, DOST-PCIEERD

**Certified Funds Available:**

  
**MARISSA G. DALAY**  
Chief Accountant, DOST-PCIEERD



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ACKNOWLEDGEMENT

REPUBLIC OF THE PHILIPPINES}  
CITY OF TAGUIG}S.S.

BEFORE ME, A Notary Public for and in the City of Taguig City this 02 JUL, 2019 day of \_\_\_\_\_ personally appeared:

	Government Issued Identification	Date/Place Issued
ENRICO C. PARINGIT	Passport #: SO014341A	18 March 2019/DFA Manila
EMANUEL C. DE GUZMAN	Passport #: <u>PUP # 91004</u>	<u>MANILA 9/19/12</u>
GINNO L. ADDRESS	Passport #: <u>P7987580A</u>	<u>18 JULY 2018 /DFA Manila</u>

Known to me as the same persons who executed the foregoing Memorandum of Agreement and they acknowledged to me that the same is their free and voluntary act and deed and that of the entities they respectively represent.

This instrument, consisting of six (6) pages, including this page whereon this Acknowledgment is written, are signed by the parties together with their instrumental witnesses one each every page thereof

TO THE TRUTH OF FOREGOING, witness now my hand and seal on the date and place first above written.

Doc. No. 159  
Page No. 33  
Book No. X  
Series of 2019

RACHEL GINAY W. COPANUT-PANGWI  
NOTARY PUBLIC UNTIL DEC. 31, 2019  
Notarial Commission Appt. No. 19 (2018-2019)  
#22 Gen. Santos Ave., Lower Bicutan, Taguig City  
PTR NO. A-4248764/1-3-19, Taguig City  
IBP O.R. No. 056215/12-06-18, RSM  
MCLE Comp. No. VI-0019686/3-1-2019  
ROLL NO. 61627



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I.8. Research outputs are utilized as inputs in:

I.8.2. the improvement of instructional processes; and



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Research Title	Time Frame	Date of Completion	Researcher/s	Faculty Adviser
Freshwater Aquarium: Automated Water Filtering and Monitoring System with Glass Cleaner	2017-2018	2018	Andreleine L. Asinas Lemuel Basalo Anthony U. Hernaez Jun Joie O. Ruiz Jr	Dr. Remedios G. Ado Engr. Ronald D. Fernando
An Improved Dryer for Desiccated Coconut	2017-2018	2018	Joyce A. Bersola, Gina R. Guttierrez Dominador B. Pilapil Jr. Mara Yssel D. Rabadon	Dr. Remedios G. Ado Engr. Ronald D. Fernando
Solar Powered Light Post with Ultrasonic Bug Zapper	2017-2018	2018	Darwin C. Borines Krizza Mae R. Cueto Christian Edward S. Dantes Ann Rio R. Pantaleon	Dr. Remedios G. Ado Engr. Ronald D. Fernando
Face Recognition Locker with SMS Notification	2017-2018	2018	Christian Joshua G. Canada Judel Andrew S. Castillo John Christian C. Galela Jayson S. Sevilla	Dr. Remedios G. Ado Engr. Ronald D. Fernando
Automated Jeepney Exhaust Gas Thermoelectric Generator Mobile Device Charger with Android Application Monitoring System	2017-2018	2018	John Ariel M. Baygan Rey M. Oronos Jr. Mezzraem M. Delos Reyes Janette L. Emen Edcel D. Maranon	Dr. Remedios G. Ado Engr. Ronald D. Fernando
Automated Mango Shelf Life Preserver and Sterilizer Storage	2017-2018	2018	Alvin Delos T. Santos Miguel T. Mirano John Viane C. Nieva Janine G. Tan	Dr. Remedios G. Ado Engr. Ronald D. Fernando
Direct Sketch-To-Printed Circuit Board Printer	2017-2018	2018	Jasper C. Besmonte Jerome P. Garcia Carl Jhon Steven M. Ignacio Jay Bradley L. Nebre	Dr. Remedios G. Ado Engr. Ronald D. Fernando
Water Hyacinth Harvester Controlled by Android	2017-2018	2018	Quinn Raineer Angelo Dela Cruz	Dr. Remedios G. Ado

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Application with Fiber and Pulp Extraction System			Daniela Airies C. Maravilla Marinette Carla R. Tayag	Engr. Ronald D. Fernando
Development of 3D Map of Selected Buildings of Polytechnic University of the Philippines Utilizing LiDAR System on Quadcopter	2017-2018	2018	Rachel Dee S. Pecio Mae Joyce Anne A. Quinto Danica Mae P. Reginio Juan Miguel V. Manuel	Dr. Remedios G. Ado Engr. Ronald D. Fernando
Arduino-based Fingerprint-Scanning Door Lock with Notification System	2017-2018	2018	Alaica Dawn P. Bonachita Eirrand Km L. Pascual Ramil R. Ramos John Denmark B. Sanchez Ronald D. Fernando Remedios G. Ado	Engr. Florinda H. Oquindo Engr. Julian L. Lorico Jr.
Integration of Renewable Energy Sources using Rice Husk as an Alternative Source of Bioethanol	2017-2018	2018	Ivy T. Balmes Hazel Mae J. Bandillo Rian Justine M. Quingco Joahna Given Uy	Engr. Florinda H. Oquindo Engr. Julian L. Lorico Jr.
SILAW 2.0: A Hybrid Light Buoy System with Modular Powerbank Utilizing Renewable Energy Sources	2017-2018	2018	Jordan Michael M. Baccay Alexzyda D. Gonzalo Reina G. Jancorda Dennis G. Salazar Jr. Orland D. Tubola	Engr. Florinda H. Oquindo Engr. Julian L. Lorico Jr.
Coconut Coir Mixer and Compactor for Hollow Blocks	2017-2018	2018	Mark Alvin M. Bendaña Clyde Jeonell P. Garcia Jedidiah Kirsten Guzman Lovely A. Torres	Engr. Florinda H. Oquindo Engr. Julian L. Lorico Jr.
Liquefied Petroleum Gas Leak Detector with GSM Module using Arduino	2017-2018	2018	Arben John P. Avillanosa Bryan Shane B. Caragan Cedric SA. Sanchez Joard Vince V. Verzosa	Engr. Florinda H. Oquindo Engr. Julian L. Lorico Jr.

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Weight Measurement of Sea Cucumber ( <i>Holothuria Scabra</i> ) Utilizing Image-Based Volume Calculation In An Underwater Condition	2017-2018	2018	Ellen Grace R. Banagan Ryan P. Iraola Camille C. Malaza Charlene O. Quebada Orland D. Tubola	Engr. Florinda H. Oquindo Engr. Julian L. Lorico Jr.
Solar Powered Smart Free-flow Water Network System	2017-2018	2018	Donna Grace S. Espina Abraham A. Faurillo Alexzandra Marie L. Masinda Gil M. Panican Jr. Orland D. Tubola	Engr. Florinda H. Oquindo Engr. Julian L. Lorico Jr.
Solar-Powered Ultrasonic Pest Repellent with Android Application	2017-2018	2018	John Tovi U. Bas Merly Anne C. Cagara Kyle A. Dacaymat Dickon S. Valdez	Engr. Florinda H. Oquindo Engr. Julian L. Lorico Jr.
Portable 3D Laser Scanner with Web-Based Application and Real-Time Output Processing	2017-2018	2018	Aaron B. Alcoba Limmanuel B. Lopez Clifford Jay C. Mamauag Ma. Pamela Z. Patawaran	Engr. Florinda H. Oquindo Engr. Julian L. Lorico Jr.
Automated Hydroponic Irrigation System	2017-2018	2018	Glen Mark P. Baguio Karen Mae P. Mendoza Rochelle R. Mendoza Dyan Krizlen R. Rioflorido	Engr. Florinda H. Oquindo Engr. Julian L. Lorico Jr.
Semi-Automated Corn Cobs Shredder and Bio-Briquette Maker	2017-2018	2018	Christian R. Longos Archie D. Miranda Nathaniel I. Quierrez Justin Kyle Marvin A. Quitasol	Dr. Arvin R. De La Cruz Engr. Pedrito M. Tenerife Jr.
Automated Dried Water Hyacinth ( <i>Eichhornia crassipes</i> ) Parenchyma Remover and Scraper	2017-2018	2018	Hyrum D. Agudo Limuel M. Calatin Dominic D. Carlos Eriel Louise D. Chavez	Dr. Arvin R. De La Cruz Engr. Pedrito M. Tenerife Jr.
Automated Oil Extractor Utilizing Talisay ( <i>Terminalia catappa</i> ) Kernel as a Source of Biodiesel	2017-2018	2018	Tiffany C. Domugho Krystian Neil R. Menguito Julio M. Nervar	Dr. Arvin R. De La Cruz Engr. Pedrito M. Tenerife Jr.

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Wireless Sensor Network for Sewerage Monitoring	2017-2018	2018	Reinier Von P. Verian Franchette Suzzaine Buray Stephanie Pasicolan Orlando Punzalan <sup>1</sup> Jr. Gilbert Ramos	Dr. Arvin R. De La Cruz Engr. Pedrito M. Tenerife Jr.
Location and Time-Based Dual Axis Solar Tracking System for Efficient Solar Energy Conversion Implemented in Raspberry Pi 3	2017-2018	2018	Seth Joshua C. Acuin Arvin R. De La Cruz John Ace B. Donato Paul Christian P. Remerata Laura T. Salvado	Dr. Arvin R. De La Cruz Engr. Pedrito M. Tenerife Jr.
Banana Fiber Decorticator with Wringer	2017-2018	2018	Alexis Christellene M. Arce Kathleen Meriel D. Ortega Ma. Arianne N. Pabularcon Ralph Lorenz R. Rafallo	Dr. Arvin R. De La Cruz Engr. Pedrito M. Tenerife Jr.
Monitoring System with Hybrid Photobioreactor for Biomass Production of Spirulina Plantensis SP.	2017-2018	2018	Jan Lennard A. Augusto Tracey C. Cabacaba Ann Maekylah N. Paiton Mary Margarette L. Velasquez Armin S. Coronado Orland D. Tubola	Dr. Arvin R. De La Cruz Engr. Pedrito M. Tenerife Jr.
Image-Based Microalgae Cell Identifier and Counter Implemented in Raspberry Pi	2017-2018	2018	Wilgefortiz P. Catchillar Dannah Louise L. Gabuni Nathaniel Lewis Galang Adrienne Paule M. Langit Orland D. Tubola	Dr. Arvin R. De La Cruz Engr. Pedrito M. Tenerife Jr.
Anti-Plagiarism Device Using PyTesseract Optical Character Recognition Technology and PlagScan	2017-2018	2018	Ronel Z. Galon Romeo G. Gatcheco III Nancy D. Malgapo Joseph Adrian R. Sayno	Engr. Julius S. Cansino Engr. Rolito L. Mahaguay
Aquaculture System for Silver Perch ( <i>Leiopotherapon plumbeus</i> ) using Media-based Aquaponics for BFARNIFTC,	2017-2018	2018	Teejay Jamlang Daniel James Punzalan Roman Tristan Pol	Engr. Julius S. Cansino Engr. Rolito L. Mahaguay

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Tanay, Rizal			Angelo Nichol Suinan	
Boarding House for Rent Finder for Student Boarders with Android Application	2017-2018	2018	Randell O. Arga	Engr. Julius S. Cansino Engr. Rolito L. Mahaguay
Fish Detector and Luring System with Global Positioning System (GPS)	2017-2018	2018	Reynell C. Bobihis Christine Ann O. Buyoc John Edward D. Narra Jan Reuelle P. Teña Cedrix B. Tumlos	Engr. Julius S. Cansino Engr. Rolito L. Mahaguay
Smart Anti-Carjack Module Using Internet of Things Technology	2017-2018	2018	Jolessa O. Cerbito Ejay L. Jacob Athena Mariel Angela G. San Jose Mary Grace R. Taña	Engr. Julius S. Cansino Engr. Rolito L. Mahaguay
Coco-net Weaving Machine	2017-2018	2018	Elijah B. De Castro Irish D. Jamili Felrose M. Payas Jayson E. Quitain	Engr. Julius S. Cansino Engr. Rolito L. Mahaguay
Multi-Layered Automatic Flour Sifter	2017-2018	2018	Justine S. Crisostomo Lenarey S. Torrit Joshua Daniel C. Tubalinal	Engr. Julius S. Cansino Engr. Rolito L. Mahaguay
Solar-powered Multipurpose Vendo Cart for Small Scale Businesses	2017-2018	2018	Mark Paulo A. Cube Mark B. Hernandez Benito S. Mascariñas Jr. Jayvin O. Velayo	Engr. Julius S. Cansino Engr. Rolito L. Mahaguay
The Development of Autonomous Earthquake Response Drone and Mapping of Search Resilience Operations	2017-2018	2018	Raniel Christian M. Agno Marc Rendell M. Ching Roger Louisse L. Eustaquio Patrick L. Gomez	Engr. Julius S. Cansino Engr. Rolito L. Mahaguay
Vertical Aeroponics System	2017-2018	2018	Nomer R. Aringo Christine Joy C. Cayona Rachelle Anne G. De Villa Neil Adriane H. Sangalang	Engr. Julius S. Cansino Engr. Rolito L. Mahaguay

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Portable Microcontroller-Based Water Quality Assessor of Effluent Septic Tank Chamber of San Juan River	2017-2018	2018	Rafael Christian S. Aguilar Daryl Don A. Arce Reynaldo A. Ilagan Nica Chloie G. Yecla	Engr. Ferdinand O. Natividad Dr. Antonio Y. Velasco
Removal of Water Hyacinth through the Use of Unmanned Water Vehicle	2017-2018	2018	Eleazar R. Año Jon Rhozze P. De Jesus Aldrin N. De Ramos Prince Deozel M. Espiritu	Engr. Ferdinand O. Natividad Dr. Antonio Y. Velasco
Automated Production of Effective Microorganisms – Mudballs for Possible Ecological Imbalance and Polluted Bodies of Water	2017-2018	2018	Princess Nicole Bacay Judylene U. Gabia Abigail D. Macasinag Jennilene A. Pol	Engr. Ferdinand O. Natividad Dr. Antonio Y. Velasco
Paper Recycling Automation Device for Pot Paper Mache Business Using Android Application	2017-2018	2018	John Jerald G. Bautista Neil Carlo B. Del Mundo Jessieca B. Diano Lloyd G. Gabriel	Engr. Ferdinand O. Natividad Dr. Antonio Y. Velasco
Microcontroller-based Compost Making Machine utilizing Biodegradable Waste	2017-2018	2018	Ephraim Joel M. Capistrano Jerwin Russell Esmalla Joseph R. Lat Kenneth M. Lobaton	Engr. Ferdinand O. Natividad Dr. Antonio Y. Velasco
Remote Controlled Harvesting Machine for Lemongrass (TANGLAD)	2017-2018	2018	Kimberly S. Buñag Nikko O. De Vera John Karl L. Malabanan Kevin Red B. Salamat Miguel S. B. Turqueza	Engr. Ferdinand O. Natividad Dr. Antonio Y. Velasco
Balut Processing Mechanism for the Philippine Balut Industry with Short Message Service (SMS) Alert Monitoring System	2017-2018	2018	Jazz Joel D.G. Alvarez Jason Edward V. Bio Rofherson C. Suzon Rovien P. Vargas	Engr. Ferdinand O. Natividad Dr. Antonio Y. Velasco
Automated Ferry Ticketing System with Corresponding Android Application	2017-2018	2018	Ryan G. Baronia Mark Joshua O. Francisco John Israel M. Mesajon	Engr. Ferdinand O. Natividad Dr. Antonio Y. Velasco

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Arduino-Based Solution Coated Fruits and Vegetables Machine for Food Preservation	2017-2018	2018	Rick Anthony E. Policarpio Francess Marie A. Busalpa Clarisse I. Ibasco John Peter F. Mendoza Rollen Joy S. Nabia	Engr. Ferdinand O. Natividad Dr. Antonio Y. Velasco
ROGER: Rescuer On Go Emergency Reduction – Android Based Locator Application Utilizing Indoor Positioning System (IPS) For Polytechnic University Of The Philippines	2017-2018	2018	Christine Joyce P. Llanes Merynelle D. Lopez Dale Ivan M. Merza Hanah Mae P. Zamora	Engr. Ferdinand O. Natividad Dr. Antonio Y. Velasco

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Research Title	Time Frame	Date of Completion	Researcher/s	Faculty Adviser
A Virtual Private Network – Based Water Quality Monitoring System For Sea Cucumber	2016-2017	2017	Raymond Y. Leabres, Rey-Dante A. Montero, Crescel Charmaine DG. Nudalo, Sharaina Mae Prudenciano	Engr. Pedrito M. Tenerife
Air Quality Manager For Portable Toilets Controllable via Microcontroller-Based Remote Control	2016-2017	2017	John Israel O. Aquino, Lerry Joy DC. Cabanding, Keene S. Clavecilla, Hobie Manvel T. Gamponia, Jonas C. Macatangay	Dr. Antonio Y. Velasco, Engr. Ferdinand O. Natividad
Automated Adhesive Maker Using Pine Tree Sap	2016-2017	2017	Rowan T. Camagay, Ralph Paolo V. Gabatino, Louise M. Nunez, Cesar Allen M. Suba	Dr. Antonio Y. Velasco, Engr. Ferdinand O. Natividad
Automated Bioethanol Fermentor from Pineapple Peel Extract with Monitoring System	2016-2017	2017	Justin Christopher B. Estorga, Ivy Marie G. Porras, Shanilyn Louise G. Santiago, Lleur R. Tan	Engr. Julius S. Cansino, Engr. Ronald D. Fernando
Automated Brick Maker from Pet Bottles and Coconut Husks	2016-2017	2017	Juan Paulo S. Escario, Hannah Lae M. Francisco, Jake Lester B. Gatchalian, Karen Ann S. Lameresia	Dr. Antonio Y. Velasco, Engr. Ferdinand O. Natividad
Automated Dishwasher for PUP Canteen	2016-2017	2017	Ariane D. Aquino, Alexander M. Casabuena Jr, Pia Salve Alexis C. Dayao, Van Erick A. Mangaoang	Dr. Antonio Y. Velasco, Engr. Ferdinand O. Natividad
Automated Dog Feeder with Monitoring System and Mobile Application	2016-2017	2017	Angela D. Milallos, Roemar D. Pajaron, Akira Kim H. Soriano	Dr. Remedios G. Ado, Engr. Julian L. Lorico Jr.
Automated Glass Wall Cleaner	2016-2017	2017	Melvin G. Ampit, Analie B. Moreno, Jan Socorro A. Policarpio, Alfonzo T. Suarez	Dr. Remedios G. Ado, Engr. Julian L. Lorico Jr
Automated Gluten-Free Banana Flour Maker	2016-2017	2017	John Elijah B. De Asis, Neryl Anne B. Empenio, Pierangelo P. Martin, Francesca B. Villasanta	Dr. Remedios G. Ado, Engr. Julian L. Lorico Jr.
Automated Grinder, Boiler And Strainer For Soymilk and Silken Tofu Maker	2016-2017	2017	Jayvee G. Asuncion, Romina Shaye V. Banadera, Warren Mae A. Bernabe, Sheila Victoria C. Siongco	Dr. Remedios G. Ado, Engr. Julian L. Lorico Jr.
Automated Irrigation System	2016-2017	2017	Mary Joyce D. Cruzado, Aira May G. Cueto, Jan Errand C. Del Rosario, Darlyn P. Marcelo	Dr. Antonio Y. Velasco, Engr. Ferdinand O. Natividad
Automated Longganisa Maker	2016-2017	2017	Nina Geralyn R. Palambiano, Mary Andrea L. Ricafuerte, Paul Aldrin P. Roque, Jefferson T. Tonic	Engr. Julius S. Cansino, Engr. Julian L. Lorico Jr.

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Automated Steamed Rice Maker	2016-2017	2017	Mark Angelo J. Borillo, Dayle C. Dantes, Jano B. Omugtong, John Michael M. Soliven	Engr. Florinda H. Oquindo, Engr. Julian L. Lorico Jr.
Automated Water -Based and Acrylic Paint Color Mixer with Object Color Scanner	2016-2017	2017	Ryan Gabriel S. Bunquin, Roselyn R. Cañete, Rose Suzette M. Lapitan, Michael B. Villaverde	Engr. Julius S. Cansino, Engr. Ronald D. Fernando
Autonomous Disaster Risk Response Drone Built on Top of Aksyon Sentral Platform	2016-2017	2017	William B. Caballero Jr, Francisc Jerhone E. Camillo, Shella May B. Cantos, Christian Ashley P. Mones	Engr. Julius S. Cansino, Engr. Ronald D. Fernando
Bus Passenger Monitoring And Ticketing System Using RFID	2016-2017	2017	Rodemar John A. Aguilar, Arjay C. Dala, Peach F. Dapitan, Arrah Shaine L. Lumbreras	Dr. Remedios G. Ado, Engr. Julian L. Lorico Jr.
Development of Low-Cost Lidar System Utilizing Quadcopter as UAV (Unmanned Aerial Vehicle) for 3D Building Model Reconstruction	2016-2017	2017	Wency T. Burlat, Dan Jewele R. Sanchez, Jelony M. Sobremisana, Jan Carlo G. Urminita	Engr. Pedrito M. Tenerife
Eye Berry Pi: Gate Security with Implementation of Deep Learning Facial Recognition	2016-2017	2017	Martin John R. Lopez, Emmanuel G. Nipal, Dave Robert E. Torrente, Jovani C. Warguez	Dr. Remedios G. Ado, Engr. Julian L. Lorico Jr.
Fish Cages Lighting System in Alaminos, Pangasinan Utilizing Hydropower, Saltwater and Solar Hybrid Renewable Energy Resources	2016-2017	2017	Lawrence M. Ignacio, Karen P. Landoy, Dave Allen B. Motea, Argene G. Rafael	Engr. Pedrito M. Tenerife Jr.
Fish Finder via Android Application	2016-2017	2017	Gadfrey Ajerico T. Sumague, John Jay C. Barcela, Jason D. Elano, Paul Roger D. Enriquez	Engr. Rolito L. Mahaguay, Engr. Florinda H. Oquindo
Free Energy Generator for Neodymium Magnet For Charging Mobile Devices	2016-2017	2017	Jervin L. Carlos, Jarmaine Faye A. Geda, Drexler Ceasar M. Jose, Ian Kristopher A. Santos	Engr. Florinda H. Oquindo, Engr. Rolito L. Mahaguay
Fruit And Vegetable E-Slicer	2016-2017	2017	Christian Jay G. Aligega, Jason L. Conception, John Benedict G. Dimalaluan, Rose S. Fortaliza	Engr. Florinda H. Oquindo, Engr. Rolito L. Mahaguay
Google Map-Based Restaurant/Food Chain Finder Android Application	2016-2017	2017	Cyrille T. Ablaza, Janine D. Buarao	Engr. Julius S. Cansino, Engr. Ronald D. Fernando
Greywater Filtration System for Household Laundry with Water Quality Monitoring	2016-2017	2017	Maricar C. Bahaya, Dan Andre A. Camacho, Melvin B. Rabadon, Joanah Marie G. Ramos	Engr. Pedrito M. Tenerife

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Instagrind Fresh Ground Coffee From Roasting To Grinding	2016-2017	2017	Jobelle H. San Juan, Diane Christelle S. Sismundo, Airianee Jasmine D. Tanyag, Danica Faye SA Villanueva	Dr. Remedios G. Ado, Engr. Julian L. Lorico Jr
Intelligent Wireless Greenhouse Climate Management System for Strawberry Production	2016-2017	2017	Patric Ian N. Esposo, Alvin M. Lipara, Jerico P. Sangrador, Jayrald O. Teberio	Engr. Pedrito M. Tenerife
MCU - Based Soil Monitoring System	2016-2017	2017	Adler Ken B. Bulado, Royce Ivan F. Fadriqueña, Giancarlo M. Javier, Charles Marco H. Salen	Dr. Antonio Y. Velasco, Engr. Ferdinand O. Natividad
MCU-Based Steam Iron	2016-2017	2017	Rish Joy O. Del Rosario, Serjay S. Ilaga, Tello O. Tamayo, Jocelle L. Tanqui-on	Dr. Remedios G. Ado, Engr. Julian L. Lorico
Mosquito Repellent Misting System	2016-2017	2017	Janea Chris S. Agupitan, Jess Vincent C. Redula, Jomelle F. Taduran, Kimberly D. Villajuan	Engr. Florinda H. Oquindo, Engr. Rolito L. Mahaguay
Piso Voting Kiosk with Databased Powered by Cloud Technology	2016-2017	2017	Jose Renzo D. Bainco, Bea Aira Lee S. Corpuz, Angela Rose C. Divva, Romar V. San Juan	Dr. Remedios G. Ado, Engr. Julian L. Lorico Jr.
Sign Language: A Non-Signers' Guide Through Hand Movement Analysis and Face Recognition	2016-2017	2017	Anthony Louise P. Balon, Carl C. Cortina, Neriell P. Mallari, Jervin A. Mandapat	Dr. Antonio Y. Velasco, Engr. Ferdinand O. Natividad
Smartphone Message Converter to Braille Display with Voice Synthesizer	2016-2017	2017	Geane Marie Karla N. Figueroa, Maverick B. Linget, Marie Carissa B. Mantala, Jennifer J. Tolentino	Dr. Antonio Y. Velasco, Engr. Ferdinand O. Natividad
The Development of a Sound Frequency Attract-To-Kill Mosquito Device	2016-2017	2017	Chriz C. Cabajes, Ron Sarte R. Guardo, Roi Joshua D. Timoteo, Richard B. Velonza Jr.	Engr. Rolito L. Mahaguay, Engr. Florinda H. Oquindo
The Generation of Cathode utilizing Carbonized Egg Shell in Replacement to Manganese Dioxide in Battery Production	2016-2017	2017	Johnuel C. Espiritu, Aira F. Ramel, April Rose D. Rosauo, Danica Rose U. Santos	Engr. Florinda H. Oquindo, Engr. Rolito L. Mahaguay
The Movable Rat Trapping And Exterminating System	2016-2017	2017	Geneva B. Cudal, Jefferson A. Danilla, Roel G. Dayor Jr., Renzel A. Delos Santos	Engr. Florinda H. Oquindo, Engr. Rolito L. Mahaguay

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I.8. Research outputs are utilized as inputs in:

I.8.3 the transfer of generated technology/knowledge to the  
community





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## Silaw Pictures in BFAR- Pangasinan with CpE Faculty and BFAR officials

This is the Proof of Utilization of Technology, Knowledge, Skills acquired from the extension projects and activities.





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