Appendix C.

RDE BANNER PROGRAMS AND PROJECTS
2018-2022
Carig Campus

Banner Program: Industry, Energy & Emerging Technologies

Goal: To become a nationally recognized seat of Research for Development Centres as well as Research Laboratories and Service Facilities for the production of high value food, energy source, technical innovations, engineered products, alternative medicines, and delivery of laboratory services, environmental concerns as well as governance for global competitiveness.

Objectives:

1. To develop innovative food and conduct value chain for existing food products to ensure food security.
2. To design, innovate, and fabricate industrial equipment and engineered products for commercialization.
3. To develop cost efficient packaging material for food and non-food products through the Regional Industrial Research and Development Service Centre
4. To introduce Innovative Electronic Vehicle for energy and environmental conservation.
5. To develop natural herb remedies with fewer side effects, well-tolerated by the body and less-expensive than synthetic drugs produced by pharmaceutical companies.
6. To be a laboratory service provider in the conduct of biotechnology and animal health researches in the university and other research communities in Region 02.
7. To explore researchable areas along industry, energy, emerging technologies, environment, health, biotechnology, governance, and spearhead in the conduct of such.
8. To partner with stakeholders for the growth and development of metals, blacksmithery, food and other sectoral industries.
9. To develop and publish IEC materials.

Challenges:

1. Speed up the proliferation of SMEs in the region for the rural poor.
2. Limited Engineering research resources and non-existence of Research and Development centres in the region.
3. Dependence on Traditional Processes and Resistance to change.
4. Rising Cost of Existing Products, Equipment, machineries, implements, Cooking Fuel and Energy.
5. High cost of health care impacting the poor and marginalised families and increasing risk of spreading resistant microorganisms.
6. Increasing demand of laboratory animals as well as animal health services and absence of animal laboratory research facility in the region
7. Pollution
8. Value Chain

Plan Strategy:

1. Benchmark on industries abroad to look into their technology and best practices that could be adopted.
2. More Collaborative Researches among faculty and students.
3. Conduct of relevant trainings and seminars.
4. Participation to national and international training/seminars.
5. Establishment of Small and Micro Enterprises.
6. Linkages with Foreign Partners and stakeholders.

COMODITY/BANNER PROGRAM: Industry, Energy & Emerging Technology, Environment and Governance.

CAMPUS: Carig

RESEARCH PRIORITY AREAS	PROGRAM/ PROJECT/ STUDY	SPECIFIC ACTIVTIES	TIME FRAME					EXPECTED OUTPUT				
			2018	2019	2020	2021	2022	2018	2019	2020	2021	2022
Industry	E-trike Installation and Stability Research	Project conceptualization. Fabrication and Testing of E-Trikes • Test and evaluate the performance of E-trike • Determine fuel gas Consumption rate	/	/ / /				Submitted full blown proposal to PCIEERD for funding.	Designed and fabricated innovative E-Trikes. Gathered data on mileage, emission of CO2, battery range, utilization rate, odor, acceptability, and efficiency test. Reduced			

		• Analyse the pollution Reduction in terms of CO2 and odor. Installation of E Trike stations within the government Centre and CSU-Carig Campus Establish partnership with Motor Industries in the commercialization of the E-trikes Conduct of transport business with E-trike		/ /	/ /	/ /	/ /		Fossil fuel used. Reduced pollution Phase 1 Installation of E-trike station in the government center	Phase 11 Development of E-trike Scheme at Carig Campus compound	Commercialization of E-trikes through partner motor industries. Operate transport enterprise with E-trike drivers and operators.	
	Construction of Building for Laboratory Animal Facility	Coordination and project preparation.	/					Coordinated with proper authorities for the start of the project.				
		Earth, Concrete, Rebar, Masonry, Plastering, Steel	/					Completed Earth, Concrete, Rebar,				

		decking system and Steel works.						Masonry, Plastering, Steel decking system and Steel works				
		Doors, windows & ceiling works, Tile, Stare Railings, Painting, Plumbing and Electrical works		/					Completed Doors, windows & ceiling works, Tile, Stare Railings, Painting, Plumbing and Electrical works.			
		Launching and operation of the Laboratory Animal facility			/	/	/			Launched and operate the animal Service Facility. Supply quality laboratory animals and services to researches in the region. Conduct testing of biochemical and pre-clinical trials of medicinal plants. Accelerate marketing of products. Manage laboratory animals for instruction, research and extension.		

										Provide services to researchers, faculty, students, and pharmaceutical companies.
	Establishment and Upgrading of Integrated Engineering Research Laboratory	Setting up of the Integrated Engineering Research Laboratory. Inventory of equipment and installation of newly procured equipment, software and facilities. Conduct of training for faculty and students. Designing and development of auxiliary equipment. Testing of fabricated equipment.	/	/ / /	/ / /	/ / /	/ / /	Upgraded existing Engineering Research Laboratory	Trained faculty and students on the use of equipment in Regions 1,II,III , CAR and other SUCS in the country. Developed and designed auxiliary equipment Tested the fabricated equipment.	

	Establishment of Biology and Biotechnology Regional Laboratory	Instituting of the Regional Biology and Biotechnology Laboratory. Procuring needed equipment and facilities. Conduct laboratory skills training, laboratory safety and accreditation. Conduct biology and biotechnology analysis	/	/ /	/ /	/ /	/ /	1 Regional Biology and Biotechnology Laboratory	Installed microbiology, food testing, histopathology,parasitology, and animal diagnostic equipment. Enhanced laboratory skills of laboratory technicians and researchers.	Biology and biotechnology Analysis Packaged Research and Extension activities

	Establishment of the Regional Industrial trade Research and Development service Center (PET bottles, canisters and tool packaging materials)	Submission of Final Proposal to PCIEERD for funding. Construction of the Regional Industrial trade Research and Development service Center. Conduct of R&D packaging Technologies. Designing and packaging of management system for cost efficiency. Testing and Evaluation of different product packaging materials.	/	/ / / /				Justified and submitted final final proposal to PIEERD.	1 Regional Industrial trade Research and Development service Center. 5 research studies conducted. Developed sustainable product formulation and process flow and created innovative products with best customer value. Conducted compatability testing to	

		Product Analysis on contamination. Precision engineering on industrial packaging research and studies. Packaging of technologies for dissemination and referred journal Patenting of Technology and application of Intellectual Property. Commercialization of PET bottles, Canisters and and tool packaging materials.			/ / /	/ / /	/ / /		developed models.	Packaged developed technology for technology transfer. Patents/Utility Models to developed products and established processes. Established delivery clause and Memorandum of Agreement. Established sustainable marketing scheme. Sustainable implementation.	
Energy	Design and Development of Mechanized Briquetting Machine	Fabrication and testing of the shredder, mixer, and compactor. Assembling the three apparatuses into mechanized Briquetting Machine		/	/ /				Developed 1 Shredder, 1 Mixer, and 1 Compactor	Mechanized Briquetting Machine	

		Research dissemination and publication. Extending the matured technology to the adopted LGU			/ /	/ /				Presentation to Research fora and publications to research journals. 5 Utility Models	Extended the technology to the adopted LGU. Generated employment to farmers during lean seasons. Employment for rural folks (marginalized sector)
	Production of Agri-waste to Energy				/	/	/			Agri wastes Briquettes from corn cobs and rice husks- an alternative fuel source using the mechanized briquetting machine. Packaging and Commercialization of the agriwaste briquettes.	

										Extended the technology to the adopted LGU.		
Emerging Technology	Development of Automated Control System for Energy Management in School Buildings	Develop a customized automated Energy Management System(EMS) for CSU		/	/				Installed EMS for the College of Engineering Lecture and Laboratory Rooms. Operational Manual for EMS			

Prepared by:

JENNILYN E. ACUPAN, M.A
Research and Development Coordinator

Concurred and Enhanced by:

POLICARPIO L. MABBORANG JR., ASEAN Engr.
Research and Development and Extension Director