



DISTRIBUTION OF STUDENTS

2019

	UPRRP	UPRM	UPRP	
	4	4	1	30%
	5	11	5	70%

Total of 30 students enrolled

2020

	UPRRP	UPRM	UPRP	
	9	5	4	53%
	3	10	3	47%

Total of 34 students enrolled

2021

	UPRRP	UPRM	UPRP	
	5	8	1	44%
	4	7	7	56%

Total of 32 students enrolled



What is RISE-UP

After a natural disaster, multiple disciplines need to come together to rebuild the damaged infrastructure using new paradigms. Commonly, the academic preparation of scholars on infrastructure-related disciplines takes place in isolated professional domains, rarely tackling interdisciplinary problems or learning from the systematic research of previous experiences. In Puerto Rico, the aftermath of Hurricanes Irma and Maria has created awareness regarding the education on infrastructure-related disciplines to provide transdisciplinary solutions to pertinent complex challenges. The **Resilient Infrastructure and Sustainability Education - Undergraduate Program (RISE-UP)** is a collaborative platform among three campuses of the **University of Puerto Rico System**. Each of these campuses offers a different educational component relevant to this enriching educational initiative.

IMPACTS

- The project trains faculty members and students so that the framework developed as part of this research can be implemented in the curricular sequence of other courses and colleges. The modules developed will be used as a guide for designing, developing, and implementing other courses.
- RISE-UP has attracted students from Engineering and Architecture programs.
- The project serves as the foundation for creating additional courses that could be common to all three campuses. This project is the first step of a long-term vision to provide Resilient Infrastructure and Sustainability Education.
- The project serves as an example of the advantages of integrating information technology to allow students from different campuses to work together towards a common goal.
- The database will become a tool to be used by academics, professionals and community members to learn from past experiences and use the cases as tools for better decision making in the planning and implementation of resilient/sustainable solutions for infrastructure.
- The remote collaboration and practical nature of the courses greatly improves education related to resilient infrastructure in the disciplines of environmental design, engineering, surveying and construction.
- Students that graduate from the program have an increase in awareness and knowledge of the problems associated with resiliency and sustainability in the context of Puerto Rico and other communities in the US and the world affected by extreme environmental conditions and the role of the interdisciplinarity in the development of effective solutions.

GOALS

- 1 Development of a case study database

49

case studies have been developed by students enrolled in regular RISE-UP courses in years 1, 2 & 3.

- 2 To collaborate to strengthen the relationship between Academia and Governmental Agencies

Federal Emergency Management Agency (FEMA)

US Army Corps of Engineers (USACE)

American Red Cross, Puerto Rico Region

College of Architects and Landscape Architects of Puerto Rico

Professional College of Engineers and Land Surveyors of Puerto Rico



RISE-UP WEBSITE <http://riseup.upr.edu/>

FACULTY

Carla López del Puerto, Civil Engineering, P.I. **UPRM**
 Humberto Cavallin, Environmental Design, P.I. **UPRRP**
 Drianfel Vázquez, Engineering, P.I. **UPRP**
 Jonathan Muñoz-Barreto, Co-P.I. **UPRM**
 José Perdomo, Co-P.I. **UPRM**
 Marcelo Suárez, Co-P.I. **UPRM**
 Fabio Andrade, Senior Personnel **UPRM**
 Ismael Pagán, Senior Personnel **UPRM**
 Luis Suárez, Senior Personnel **UPRM**
 Luis Daza, Senior Personnel **UPRRP**
 Luis Montejo, Senior Personnel **UPRM**
 Aidcer Vidot, Senior Personnel **UPRM**

EVALUATORS

Luisa Guillemard, Internal Evaluator **UPRM**
 Walter Díaz, External Evaluator **UTRGV**

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DISSEMINATION Selected Publications

- 1 "Developing a Collaborative Undergraduate STEM program in Resilient and Sustainable Infrastructure", American Society for Engineering Education (ASEE) Annual Conference, Tampa, FL, June 2019 (paper)
- 2 "Complexity Mapping for Resilient and Sustainable Infrastructure: The Doppler Radar in Puerto Rico Case Study", International Congress of Engineering, Sciences and Technology (IESTEC VII), Panama City, Panama, October 2019 (paper)
- 3 "Design and Assessment of Architecture/Engineering/Construction (AEC) Curricula for Resilient and Sustainable Infrastructure", American Society for Engineering Education (ASEE) Annual Conference, Virtual, June 2020 (paper)
- 4 "Enhancing Student Preparedness Through Experiential Learning: Lessons Learned from Assessing Building Structural Damages after the January-May 2020 Earthquakes in Puerto Rico", LACCEI International Conference, Virtual, July 2020 (paper)
- 5 RISE-UP: An Interdisciplinary Learning Tool to Generate Sustainable and Resilient Infrastructure, International Journal of Natural Disasters, Accidents and Civil Infrastructure, Vol. 19-20, 17, Virtual, February 2021 (paper)
- 6 Championing Hispanic Student Success following Natural Disasters in Puerto Rico Paper presented at 2021 ASEE Virtual Annual Conference Content Access, Virtual Conference, July 2021 (paper)
- 7 Developing Case Studies for a Repository for Resilient Infrastructure and Sustainability Education following a Natural Disaster Paper presented at 2021 ASEE Virtual Annual Conference Content Access, Virtual Conference, July 2021 (paper)
- 8 Lessons Learnt from Participating in a Virtual Interdisciplinary Undergraduate Research During the COVID-19 Pandemic, LACCEI International Conference, Virtual, July 2021 (paper)