Mauricio Cabrera Ríos

Professor
Department of Industrial Engineering
Graduate Program in Bioengineering
University of Puerto Rico – Mayagüez Campus (**UPRM**)

PERSONAL INFORMATION

Address:	210 Markina St., El Pedregal
	San Germán, Puerto Rico 00683-8540
Telephone Numbers:	(Office) (787) 4032 4040 Ext. 5964
E-mail:	mauricio.cabrera1@upr.edu, mauricio.cabrera@gmail.com
Languages:	Spanish (Native), English (Advanced), French (Basic)

OBJECTIVES

Academic Interests: To contribute to the success of an Engineering Department as a **mentor, researcher and lecturer** within the areas of Industrial Engineering, Operations Research, Manufacturing, and Biological Data Analysis.

General Research Objective: To devise methods and strategies of statistical characterization, mathematical modeling and optimization and apply them to solve relevant problems in manufacturing and biological analysis.

Specific Research Objectives: Currently, I am working on (1) simulation optimization of manufacturing processes and (2) analysis of biological data. In (1) we seek methods to identify competitive design or processing settings with low number of simulation or experimental runs, and in (2) we seek for data analysis strategies for diagnosis/prognosis and biomarker discovery in cancer and neurological diseases.

HIGHLIGHTS

Eighteen years experience in Industrial and Systems Engineering: teaching at graduate and undergraduate levels; carrying out interdisciplinary research that has been competitive, productive and consistently funded; advising students on doctoral, MS and BS theses, as well as mentoring STEM students at all levels. Diversity-oriented thanks to professional experiences in the USA (2002-3), México (2004-8) and Puerto Rico (2008-To date).

Author of 65 refereed journal papers, 63 refereed conference proceedings, and advisor in 27 MS theses and 5 BS theses. Currently advising 3 PhD Candidates, 2 PhD Students, 3 Masters students, and 28 BS students.

Fulbright Student during graduate studies at The Ohio State University; 2008 University-wide research prize at UANL; three-times Industrial Engineering (IE) Outstanding Professor at UPRM (2011, 2012, 2013). Recognized as UPRM's most productive IE researcher in the period 2008-2013. Winner of the Operational Research Society's KD Tocher Medal 2019 for the best paper in Journal of Simulation 2017-2018. My students have won more than 30 research awards. Founder in 2014 of JOUST, The Journal of Undergraduate Research Students. Current h-index: 17 (Google Scholars).

	EXPERIENCE IN ACADEMIA

Interim Chair , Dept. of Industrial Engineering, U. of Puerto Rico – Mayagüez, Mayagüez, PR, May 2019-February 2020

Professor, University of Puerto Rico-Mayagüez, Mayagüez, PR, July 2016 – To date

Founding Editor, JOUST: Journal of Undergraduate Research Students, Mayagüez, PR January 2014- To Date

Associate Professor, University of Puerto Rico-Mayagüez, Mayagüez, PR, July 2013 – June 2016

Assistant Professor, University of Puerto Rico-Mayagüez, Mayagüez, PR, July 2008 – June 2013

Research Coordinator of the Graduate Program in Systems Engineering, PISIS, FIME-UANL, San Nicolás de los Garza, N.L., México, June 2005- May 2008

Associate Professor (Indefinite Contract), PISIS, FIME-UANL, San Nicolás de los Garza, N.L., México, January 2005- June 2009

Assistant Professor (Yearly Contract), PISIS, FIME-UANL, San Nicolás de los Garza, N.L., México, October 2003 – December 2004

Postdoctoral Researcher, Polymer Processing Group, The Ohio State University, Columbus, Ohio, September 2002- September 2003

Lecturer, The Ohio State University, Columbus, Ohio, September 2002- September 2003

Research and Teaching Assistant, The Ohio State University, Columbus, Ohio, October 1999-June 2002 (RA for the Polymer Processing Group and TA for Discrete Event Simulation at Undergraduate and Graduate Levels)

	EXPERIENCE IN INDUSTRY

Industrial Engineering Analyst, The Timken Company, Columbus, Ohio, November 1998-March 1999

Industrial Engineering Analyst, The Timken Company, Columbus, Ohio, June 1998-September 1999

Technologist in Training, TAMSA, Veracruz, Veracruz, January 1997-June 1997

Industrial Engineering Co-Op, AXA-Yazaki, Monterrey, Nuevo León, August 1996- December 1996

Industrial Engineering Intern, Procter & Gamble, México, D.F., June 1996- August 1996

	EDUCATION

Ph.D. Industrial and Systems Engineering, Concentration in Optimization Applied to Polymer Processing, June 2002
The Ohio State University, Columbus, Ohio, EE.UU.

M.S. Industrial and Systems Engineering, Concentration in Operations Research, June 1999
The Ohio State University, Columbus, Ohio, EE.UU.

B.S. Industrial and Systems Engineering, December 1996
Instituto Tecnológico y de Estudios Superiores de Monterrey (Monterrey Tech) (ITESM), Campus Monterrey, MÉXICO

	TEACHING (2015-2020, available since 2003 upon request)

Undergraduate Level Courses

- Statistical Design of Experiments, 40 hrs/semester, ININ, University of Puerto Rico – Mayagüez Campus, January-May 2021 (2 sections)
- Statistical Design of Experiments, 40 hrs/semester, ININ, University of Puerto Rico – Mayagüez Campus, August-December 2020 (2 sections)
- Applied Industrial Statistics, 40 hrs/semester, ININ, University of Puerto Rico – Mayagüez Campus, January-May 2018 (1 section)
- Operations Research, 40 hrs/semester, ININ, University of Puerto Rico – Mayagüez Campus, January-May 2018 (1 section)

- Applied Industrial Statistics, 40 hrs/semester, ININ, University of Puerto Rico - Mayagüez Campus, August 2017 - February 2018 (2 sections)
- Applied Probability and Statistics for Engineers, 40 hrs/semester, ININ, University of Puerto Rico – Mayagüez Campus, January-June 2017 (1 section)
- Applied Probability and Statistics for Engineers, 40 hrs/semester, ININ, University of Puerto Rico – Mayagüez Campus, August-December 2016 (2 sections)
- Applied Probability and Statistics for Engineers, 40 hrs/semester, ININ, University of Puerto Rico – Mayagüez Campus, January-May 2016 (2 sections)

Graduate Level Courses

- Biostatistics, 30 hrs/semester, Ponce Health Sciences University, January – May 2019
- Biostatistics, 30 hrs/semester, Ponce Health Sciences University, January – May 2018
- Systems Characterization, Modeling, and Optimization, 20 hrs, UPA, Aguascalientes, México, July 2017
- Systems Characterization, Modeling, and Optimization, 30 hrs, UPAEP, Puebla, México, July 2017
- Network Flows and Graphs in Management Science, ININ, University of Puerto Rico –Mayagüez, January – June 2017
- Advanced Biostatistics, 30 hrs/semester, Ponce Heatlh Sciences University, November 2016 – February 2017

STUDENTS ADVISEMENT (2015-2020, Available since 2004 upon request)

Graduate Students at the Ph.D. Level (Advisor)

- **Isis Y. Nárvaez Bandera**, *Advisor*, UPRM Graduate Program in Bioengineering, January 2019 – to date, Dissertation: *Investigation of a Possible Association between Flaviviridae Infections and Parkinson's Disease through Optimization-based Meta-analysis*
  - ★ **2019 Third Place in Basic Sciences, 15th Scientific Annual Scientific Conference PHSU, Ponce PR (Presenter: Deiver Suárez)**
- **Deiver Suárez Gómez,** *Advisor*, UPRM Graduate Program in Bioengineering, January 2019 – to date, Thesis: *Identification of gene-cellular processes pairings through optimization*
  - ★ **2019 Third Place in Basic Sciences, 15th Scientific Annual Scientific Conference PHSU, Ponce PR (Presenter: Deiver Suárez)**
- **Shirley Huanca Ochoa**, Advisor, UPRM Graduate Program in Bioengineering, August 2019 – to date, Thesis: *Social Networks methods in epidemiological problems*
- **Daniel Rocha Clavijo,** Advisor, UPRM Graduate Program in Bioengineering, January 2020 –to date, Thesis: To be Defined
- **Lesbia O. López Limas,** Advisor, UPRM Graduate Program in Bioengineering, August 2020 – to date, Thesis: To be Defined

Graduate Students at the M.S. Level

28. **Haider Montes Masmela**, Advisor, MS Program in Applied Mathematics, UPRM, November 2020 - To Date, Thesis: Online Iterative Optimization
27. **Verónica Díaz Pacheco**, Graduated on April 30th 2021, Advisor, MS Program in Industrial Engineering, ININ-UPRM, Thesis: Decision-making during and after a hurricane crisis
   - ★ **2021 Third Place DHS Centers of Excellence Summit**, 2021, Washington DC, May 2021 (Presenter: Verónica Díaz Pacheco)
   - ★ **2019 Third Place in Graduate Poster Competition,** 2019 IEOM 4th North American Conference on Industrial Engineering & Operations Management, Toronto Canada, October 2019 (Presenter:

Verónica Díaz-Pacheco)

26. **Amil A. Font Valentín**, Graduated on January 2019, Advisor, MS Program in Industrial Engineering, ININ-UPRM, Thesis: *Genetic Commonalities between Autism Spectrum Disorder and Schizophrenia.*

25. **Yazeli E. Cruz Rivera**, Graduated on May 2018, Advisor, MS Program in Industrial Engineering, ININ-UPRM, Thesis: *Characterization, Modeling, and Optimization of Biosystems*
    - ★ **2017 Joshua E. Neimark Travel Award, 2017 AAAS Annual Meeting**
    - ★ **2016 Discover E New Faces of Engineering: College Edition**
    - ★ **2015 2ⁿᵈ Place, Undergraduate Student Paper Competition, 2015 International Conference on Operations Excellence and Service Engineering, Orlando, FL, September 2015 (Presenter: Yazeli E. Cruz Rivera)**

24. **Nicole J. Ortiz**, *Graduated on April 4, 2017*, Advisor, MS Program in Industrial Engineering, ININ-UPRM, Thesis: *Determination of Commonalities in Genetic Signatures and Signaling Pathways in Neurological Disorders: Alzheimer´s Disease, Parkinson´s Disease and Huntington`s Disease.*
    - ★ **2017 Discover E New Faces of Engineering: Professional Edition**

23. **Yaritza M. Santiago**, *Graduated on December 2, 2015*, Advisor, MS Program in Industrial Engineering, ININ-UPRM, Thesis: *The Analysis of –Omics to Understand Alzheimer's Disease*

22. **Juan F. Rosas** *Graduated on November 23ʳᵈ, 2015*, Advisor, MS Program in Industrial Engineering, ININ-UPRM, Thesis: *Biological Signaling Pathways and Potential Network Representations: Biological Discovery Through Optimization*

21. **Yaileen M. Méndez-Vázquez** *Graduated on March 27, 2015*, Advisor, MS Program in Industrial Engineering, ININ-UPRM, *Thesis: The Search for Experimental Designs for Dozens of Variables*
    - ★ **2019 Operational Research Society KD Tocher Medal for the Best Paper in Journal of Simulation 2017-2018,** Awarded by the Operationsl Research Society in London, UK on November, 2019, Shared with coauthors and advisees: Esmeralda Niño, Yaileen Méndez-Vázquez & Dick Arias
    - ★ **2015 Female Legacy in Engineering Award for Outstanding Student in Industrial Engineering, Mayaguez PR, 2015**
    - ★ **Finalist of the 2013 INFORMS Undergraduate Operation Research Prize, Washington DC, 2013**
    - ★ **2013 INFORMS Simulation Society's Underrepresented Minorities and Women Participation Award for Winter Simulation Conference 2013 (Presenter: Yaileen Méndez)**

20. **Nitza M. García** *Graduated on May 12, 2015,* Coadvisor with Dr. Marcelo Suárez, MS Program in Industrial Engineering, ININ-UPRM, Thesis: *Effect of Fly-Ash and Nanosilica in Concrete's Compressive Strength at Early Age*
    - ★ **2014 Second Place, Civil & Manufacturing Engineering, 2014 NSF Emerging Researchers National Conference, Washington DC (Presenter: Giovanni Torres)**

19. **Mary Carmen Acosta Cervantes** *Graduated on November 20ᵗʰ, 2015*, Advisor, MS Program in Industrial Engineering, ININ-UPRM, *Thesis: Towards Optimization by Similarity: Finding Windows of Maximal Similarity*

18. **Esmeralda Niño Pérez**, *Graduated on November 18ᵗʰ, 2015*, Advisor, MS Program in Industrial Engineering, ININ-UPRM, *Thesis: Iterative Multiple Criteria Simulation Optimization in Manufacturing*
    - ★ **2019 Operational Research Society KD Tocher Medal for the Best Paper in Journal of Simulation 2017-2018,** Awarded by the Operationsl Research Society in London, UK on November, 2019, Shared with coauthors and advisees: Esmeralda Niño, Yaileen Méndez-Vázquez & Dick Arias
    - ★ **2014 Second Place in the category of Graduate Students at 2014 Nea Science Day, Mayaguez PR, 2014**

Graduate Students at the M.E. Level

2. **Xavier Aguilar García**, Advisor, ME Program in Industrial Engineering, UPRM, January 2021 - To Date, Project: Gene Selection in Breast Cancer and Colorectal Cancer using Biooptimatics

1. **Wynhec Ramos Vázquez** Advisor, ME Program in Industrial Engineering, UPRM, February 2021 - To Date, Project: ViSER: Visual System for Emergency Response

SCIENTIFIC PRODUCTION (2020-2015, Available since 2001 upon request)
Book Chapters

2. E Barojas-Payán, D Sánchez-Partida, DE Gibaja-Romero, JL Martínez-Flores, M Cabrera-Ríos, **Optimization Model to Locate Pre-positioned Warehouses and Establish Humanitarian Aid Inventory Levels**, Springer Series on Optimization and its Applications (Editors:) (2019)

Papers in Refereed Journals

65. V Díaz-Pacheco, F González-Román, CE Isaza, T Richardson, R Whalin, M Cabrera-Ríos, **Individual Response and Recovery: A Learning Experience from Hurricane Maria**, Journal of Emergency Management (2021) Forthcoming

64. G Champaña-Quijano, P Rodríguez-Caraballo, E Barbosa-Rodríguez, R Fernández, VE Díaz-Cruz, L Durand-González, M Alomar-Báez, F Santiago-Ortiz, E Valdés, CE Isaza, M Cabrera-Ríos, **Tying Manufacturing Experiences and Recycling Awareness with CUBITO: Containment Utility Bin by Insertion and Tucking Operations**, Revista Internacional de Investigación e Innovación Tecnológica, Forthcoming 2021

63. SM Villanueva-Pérez, V Odeh-Couvertier, V Vázquez-García, RI Fernández-Lafuente, V Díaz-Cruz, Z Acevedo-Figueroa, J Cintrón-Font, M Rivera-Díaz, R Méndez, C Rivera-Collazo, N Díaz-Llanos, MF Sayago-Capelo, KG Chávez-Rojas, E Niño-Pérez, YM Mëndez-Vázquez, M Cabrera-Ríos, **Reintroducing Industrial Engineering Students to Manufacturing through Environmental Pertinence**, Científica 25:1 (2021)

62. FG Aponte-Ortiz, A López-Rodríguez, CD Figueroa Gutiérrez-Del Arroyo, JA Candelaria-Hernández, CA Román-Orellana, CE Isaza, M Cabrera-Ríos, **3D Printed hydroponic system**, Ingenierías 86 (2020) 6-11

61. J Pérez-Morales, D Mejías-Morales, S Rivera-Rivera, J González-Flores, M González-Loperena, FY Cordero-Báez, WM Pedreira-García, C Chardón-Colón, J Cabán-Rivera, WD Cress, ER Gordian, T Muñoz-Antonia, M Cabrera-Ríos, A Isidro, D Coppola, M Rosa, TA Boyle, V Izumi, JM Koomen, PG Santiago, **Hyper-phosphorylation of Rb S249 together with CDK5R2/p39 overexpression are associated with impaired cell adhesion and epithelial-to-mesenchymal transition: Implications as a potential lung cancer grading and staging biomarker**, PLoS ONE (2018) 13:11 e0207483. DOI: 10.1371/journal.pone.0207483

60. K Huang, W Nieves, C Marrero, M Ortiz, JC Orengo, CE Isaza, M Cabrera-Ríos, **Enhancing the capability-to-affordability ratio of a manufacturing process; The didactic case of a 3D printer**, Ingenierías (2018) 21:80 36-44

59. YE Curz-Rivera, J Pérez-Morales, YM Santiago, V González-Pérez, LM Morales, CE Isaza, M Cabrera-Ríos, **A Selection of Important Genes and their Correlated Behavior in Alzheimer´s Disease**, Journal of Alzheimer's Disease (2018) 65:1 193-205 DOI: 10.3233/JAD-170799.

58. CE Isaza, JF Rosas, EL Lorenzo, A Marrero, C Ortiz, MR Ortiz, LM Pérez, M Cabrera-Ríos, **Biological Signaling Pathways and Potential Mathematical Network Representations: Biological Discovery through Optimization**, Cancer Medicine (2018) 7:5, 1875-1895 DOI: 10.1002/cam4.1301

57. NM García, HL Soto-Toro, M Cabrera-Ríos, OM Suárez, **Optimal Cement Mixtures Containing Mineral Admixtures under Multiple and Conflicting Criteria**, Advances in Civil Engineering (2018) 2018: 3780810, DOI: 10.1155/2018/3780810
56. EM Rivera, ZI Irizarry, ML Sánchez-Peña, M Cabrera-Ríos, CE Isaza, **Baseline Detection of Potential Cancer Biomarkers with Linear Models from Microarray Experiments**, Cancer Studies (2017) 1:4, 1-15, DOI: cancerstud/4
55. E Niño-Pérez, YM Méndez-Vázquez, D Arias-González, M Cabrera-Ríos, **A Simulation-Optimization Strategy to Deal Simultaneously with Tens of Decision Variables and Multiple Performance Measures in Manufacturing**, Journal of Simulation (2017) 1-13 DOI: 10.1057/s41273-017-0056-y
54. D Sánchez-Partida, JL Martínez-Flores, M Cabrera-Ríos, **Case Study: A Comprehensive Integer Programming Model for Improving an Educational Timetable**, International Journal of Combinatorial Optimization Problems and Informatics (2016) 8:3,

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Refereed Congress Proceedings

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63. YM Méndez-Vázquez, DA Nembhard, M Cabrera-Ríos, **Simulation-Aided Assessment of Team Performance: the Effects of Transient Underachievement and Knowledge Transfer**, Proceedings of the 2020 Winter Simulation Conference, December 2020
62. V Díaz-Pacheco, MC Acosta-Cervantes, M Cabrera-Ríos, **Towards Optimization by Matching of Response Surfaces: finding Windows of Maximal Similarity**, 2019 IEOM 4th North American Conference on Industrial Engineering & Operations Management, Toronto Canada, October (2019)
    ★ **3rd Place Graduate Poster Competition**
61. E Niño-Pérez, YM Méndez-Vázquez, CA Rivera-Collazo, M Cabrera-Ríos, **Iterative Multicriteria Simulation and Prototyping Optimization in Manufacturing**, 2017 Winter Simulation Conference, Las Vegas NV, December (2017)
60. KK Castillo-Villar, M Cabrera-Ríos, M Persans, HR De Yoe, **Engaging Minority Students in Sustainable Bioenergy and Water Quality through an Education and Research Network**, 2016 ASEE's 123rd Annual Conference and Expositions, New Orleans, A, June (2016) DOI: 10.18260/p.26966
59. NJ Ortiz, J García-Guzmán, CE Isaza, M Cabrera-Ríos, **Commonalities in Genetic Signatures and Signaling Pathways in Neurological Disorders**, 2016 Industrial & Systems Engineering Research Conference, Anaheim CA, May (2016)