



Roger Z. Ríos, Ph.D.

Associate Professor of Operations Research
Systems Engineering Research Coordinator
Graduate Program in Systems Engineering
Department of Mechanical and Electrical Engineering
Universidad Autónoma de Nuevo León (México)

COORDINATES

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RESEARCH INTERESTS

General: The mathematical modeling of optimization problems, application and theory of operations research techniques, and design, development, and analysis of efficient algorithms to solve such problems.

Specific research: Heuristic and metaheuristic (GRASP, tabu search, scatter search) techniques for fast and high-quality solutions to hard optimization problems, exact optimization schemes (B&B, B&C, B&P), combinatorial optimization, scheduling, and territory design.

Application areas: Machine scheduling problems in manufacturing systems, optimization of natural gas transmission systems, efficient use of natural resources and environment, and optimal design of sales territories in the product distribution industry.

EDUCATION

Ph.D., Operations Research and Industrial Engineering, 1993 - 97
University of Texas at Austin
Austin, Texas, USA

- Dissertation: *"Optimization of the Flowshop Scheduling Problem with Setup Times"*. This dissertation addresses the makespan minimization of flow shop scheduling problems with sequence-dependent setup times. The research includes the development of both approximate algorithms for practical solutions and exact algorithms based on branch-and-cut and branch-and-bound methods.

- Supervisor: Prof. Jonathan F. Bard.
- Committee: Prof. Paul Jensen, Prof. Leon Lasdon, Prof. David Morton, and Prof. Gang Yu.
- GPA: 4.0 / 4.0.

M.S.E., Operations Research and Industrial Engineering, 1991 - 92
University of Texas at Austin

- GPA: 4.0 / 4.0.

Licenciado (B.Sc.) in Mathematics, 1983 - 88
Universidad Autónoma de Nuevo León (UANL)
San Nicolás de los Garza, NL, México

- Thesis: *"Solution of the Two-Dimensional Steady-State Heat Transfer Equation by the Finite Element Method"*. This thesis studies both linear and quadratic finite element approximations to the heat transfer equation and its impact in real-world glass-forming processes in terms of solution quality and computational (CPU time and memory) requirements.
- Supervisors: Ing. Antonio López-Reyes and Prof. Alfredo Alanís-Durán.
- GPA: 96.0 / 100.0.

ACADEMIC APPOINTMENTS

Associate Professor, June 2002 - present
Assistant Professor, June 1999 - May 2002
UANL, Graduate Program in Systems Engineering, San Nicolás de los Garza, NL, México.

Postdoctoral Research Associate, July 1997 - June 1999
Texas A&M U., Dept. of Industrial Engineering, College Station, Texas, USA.

Graduate Research Assistant, August 1994 - July 1997
Teaching Assistant, June 1994 - May 1997
Assistant Instructor, June - August 1995
Graduate Research Assistant, January 1992 - June 1994
U. of Texas, Graduate Program in Operations Research & Industrial Engineering, Austin, USA.

Teaching Assistant, February 1986 - August 1987
UANL, Facultad de Ciencias Físico-Matemáticas (FCFM), San Nicolás de los Garza, México.

Instructor, July - October 1985
Centro Galileo, Monterrey, México.

ADMINISTRATIVE APPOINTMENTS

Systems Engineering Research Coordinator, May 2008 - April 2011
Facultad de Ingeniería Mecánica y Eléctrica, UANL, San Nicolás de los Garza, NL, México.

Systems Engineering Research Lab Administrator, May 2005 - April 2008
Facultad de Ingeniería Mecánica y Eléctrica, UANL, San Nicolás de los Garza, NL, México.

Academic Coordinator of Masters Program in Systems Engineering, May 2002 - April 2005

Facultad de Ingeniería Mecánica y Eléctrica, UANL, San Nicolás de los Garza, NL, México.

VISITING APPOINTMENTS

Visiting Scholar, September – October 2007

Universitat Politècnica de Catalunya, Departament d'Estadística i Investigació Operativa, Barcelona, Spain.
Host: Prof. Elena Fernández.

Visiting Scholar, July 2005 – June 2006

Universitat Politècnica de Catalunya, Departament d'Estadística i Investigació Operativa, Barcelona, Spain.
Host: Prof. Elena Fernández.

Visiting Scholar, June – August 2004

U. of Colorado, Leeds School of Business, Boulder, Colorado, USA. Host: Prof. Manuel Laguna.

Visiting Researcher, July 1997 – July 1999

U. of Houston, High Performance Computing Center and Dept. of Mathematics, Houston, Texas, USA. Host: Prof. Ridgway Scott.

PROFESSIONAL APPOINTMENTS

Assistant Researcher, May – August 1991

Eicor Tecnología, San Nicolás de los Garza, México.

Assistant Researcher, July 1986 – September 1990

Vitro Tec, Monterrey, México.

HONORS

Professional

- **FIME-UANL Technological Innovation Merit**, 2010
Recognition granted by the Department of Mechanical and Electrical Engineering at UANL for technological innovation accomplishments.
- **UANL Thesis Award**, 2010
Supervising professor of thesis "*Diseño de Territorios Comerciales con Costos de Ruteo*" by Juan Salazar, which won the university-wide Award to the Best Master Thesis at UANL in the Natural and Exact Sciences category.
- **SEP-UANL Fellow**, Level 6, April 2010 – March 2011
University-wide distinction granted by SEP through UANL to outstanding faculty members for teaching and research.
- **FIME-UANL Research Merit**, 2009
Recognition granted by the Department of Mechanical and Electrical Engineering at UANL for research accomplishments.
- **FIME-UANL Published Work**, 2009
Recognition granted by the Department of Mechanical and Electrical Engineering at UANL for book publishing.
- **UANL Thesis Award**, 2009

Supervising professor of thesis "*Un Procedimiento de Búsqueda Miope Aleatorizada y Adaptativa para el Diseño Eficiente de Territorios de Atención Comercial con Requerimientos de Asignación Conjunta*" by Saúl Caballero, which won the university-wide Award to the Best Master Thesis at UANL in the Natural and Exact Sciences category.

- **2009 UANL Research Award**, September 2009
Most prestigious university-wide award granted by UANL to the best research work in the Engineering and Technology category.
- **SEP-UANL Fellow**, Level 5, April 2009 - March 2010
University-wide distinction granted by SEP through UANL to outstanding faculty members for teaching and research.
- **PROMEP Fellow**, 2008 - 11
Distinction granted by the Secretary for Public Education (SEP) under its Faculty Improvement Program (PROMEP).
- **Technical Committee Member Recognition**, October 2007
Distinction given by UANL magazine "Ingenierías" for contribution and support as member of its technical committee.
- **SEP-UANL Fellow**, Level 5, April 2007 - March 2009
University-wide distinction granted by SEP through UANL to outstanding faculty members for teaching and research.
- **AMC Fellow**, 2006 -
Distinction granted by the Mexican Academy of Sciences for outstanding scientific and research contributions.
- **TECNOS Award**, 2005
Supervising professor of thesis "*Operación Eficiente de Redes de Transporte de Gas Natural mediante el Método de Gradiente Reducido Generalizado*" by Humberto Flores, which won the nation-wide TECNOS Award to the Best Master Thesis given by the state of Nuevo León Government.
- **PROMEP Fellow**, 2005 - 08
Distinction granted by the Secretary for Public Education (SEP) under its Faculty Improvement Program (PROMEP).
- **MEC Visiting Scholar Award**, July 2005 - June 2006
Award granted by the Spanish Ministry for Education and Science for visiting scholars on sabbatical leave at Spanish institutions.
- **Biographee**, 2006
Biographical profile listed in *Marquis Who's Who in the World*.
- **Biographee**, 2006
Biographical profile listed in *Leading Educators of the World 2006*, International Biographical Centre, Cambridge, England.
- **SEP-UANL Fellow**, Level 5, April 2005 - March 2007
University-wide distinction granted by SEP through UANL to outstanding faculty members for teaching and research.
- **Biographee**, 2005
Biographical profile listed in *Leading Scientists of the World 2005*, International Biographical Centre, Cambridge, England.

- **AMC-FUMEC Young Investigator Award**, June - August 2004
Award granted by the Mexican Academy of Sciences and Mexico-USA Science Foundation to pursue Summer research in an American institution. Only six awards were granted nation-wide.
- **SEP-UANL Fellow**, Level 5, April 2004 - March 2005
University-wide distinction granted by SEP through UANL to outstanding faculty members for teaching and research.
- **Biographee**, 2003-2004
Biographical profile listed in *Who's Who in Science and Engineering*.
- **SEP-UANL Fellow**, Level 5, April 2003 - March 2004
University-wide distinction granted by SEP through UANL to outstanding faculty members for teaching and research.
- **ALIO Vice-President**, November 2002 - October 2004
Elected by the Latin-American Association on Operations Research (ALIO).
- **SEP-UANL Fellow**, Level 3, April 2002 - March 2003
University-wide distinction granted by SEP through UANL to outstanding faculty members for teaching and research.
- **SEP-UANL Fellow**, Level 3, April 2001 - March 2002
University-wide distinction granted by SEP through UANL to outstanding faculty members for teaching and research.
- **2000 Excellent Performance**, February 2001
Evaluation granted by the FIME Doctoral Committee, UANL, for yearly scientific production and activities in the doctoral program.
- **Young Investigator Award**, October 2000 - October 2003
Granted by CONACYT to fund a 3-year research project.
- **1999 UANL Research Award**, Exact Sciences category, September 2000
Most prestigious university-wide award granted by UANL to the best research work.
- **Host Researcher**, July 2000 - June 2001, July 2001 - June 2002
CONACYT's "Cátedra Patrimonial de Excelencia" Program, hosting Dr. Vyacheslav Kalashnikov from Central Economics and Mathematics Institute, Moscow, Russia.
- **Invited Cluster Co-chair**, May 2000
"Energy", INFORMS National Meeting, Salt Lake City, USA.
- **UANL Academic Corps Fellow**, Level 2, January 1999 - February 2001
University-wide distinction granted by UANL to outstanding faculty members for teaching and research. Level 2 is the 3rd highest category (out of 4).
- **Invited Cluster Chair**, October 1998
"Energy", INFORMS National Meeting, Seattle, USA.

Professional: Mexican System of Research Scientists

- **SNI Fellow**, Level 2, January 2010 - December 2014
Highest award granted by the Mexican National System of Research Scientists (SNI) for scientific merit. Level 2 is the 2nd highest category (out of 4).
- **SNI Fellow**, Level 2, January 2006 - December 2009

Highest award granted by the Mexican National System of Research Scientists (SNI) for scientific merit. Level 2 is the 2nd highest category (out of 4).

- **SNI Fellow, Level 1, July 2000 - December 2005**
Highest award granted by the Mexican National System of Research Scientists (SNI) for scientific merit. Level 1 is the 3rd highest category (out of 4).

Graduate: Fellowships and Scholarships

- **Travel Grant, May 1997**
Granted by the Graduate Engineering Council at UT-Austin to attend the INFORMS National Meeting in San Diego, USA.
- **David Bruton Fellowship, 1996 - 97**
Granted by UT-Austin to an outstanding doctoral student.
- **E. D. Farmer Fellowship, 1996 - 97**
Granted by the Institute of Latin American Studies at UT-Austin to an outstanding Mexican doctoral student.
- **Travel Grant, January 1996**
Granted by the NSF and the U. of Arizona to attend the Stochastic Programming Tutorial in Tucson, USA.
- **Travel Grant, October 1995**
Granted by the Mechanical Engineering Dept. at UT-Austin to attend the INFORMS National Meeting in New Orleans, USA.
- **E. D. Farmer Fellowship, 1995 - 96**
Granted by the Institute of Latin American Studies at UT-Austin to an outstanding Mexican doctoral student.
- **E. D. Farmer Fellowship, 1994 - 95**
Granted by the Institute of Latin American Studies at UT-Austin to an outstanding Mexican doctoral student.
- **University Continuing Fellowship, 1993 - 94**
Highest university-wide honor award granted by UT-Austin to an outstanding continuing doctoral student.
- **Fellowship for Ph.D. studies, 1993 - 95**
Granted by CONACYT.
- **Fellowship for M.S. studies, 1991 - 92**
Granted by the Mexican National Council of Science and Technology (CONACYT).

Graduate: Honors and Research Awards

- **Best Graduate Student Paper Award, October 1996**
2nd Student Research Conference, U. of Texas, Austin, USA.
- **Best Graduate Student Paper Award, November 1995**
1st Student Research Conference, U. of Texas, Austin, USA.
- **Omega Rho International Honor Society Inductee, since 1992**
Inducted by the Operations Research Society of America (now INFORMS).

Undergraduate

- **Top ranked Mathematics major student, 1984 - 1987**

UANL, Facultad de Ciencias Físico-Matemáticas.

- **Scholarship for undergraduate studies, 1983 - 1987**
Granted by the Mexican Mathematical Society and the UANL.
- **1st Place on Mathematics Contest, August 1983**
Granted by the Mexican Mathematical Society and the UANL to the winner of the state-wide contest for high school students in the state of Nuevo León, México.

COMMITTEES

Evaluation/Reviewing Committees

- **Reviewer of CONACYT's National Postdoctoral Program, 2010**
Certification granted by the Mexican National Council for Science and Technology to evaluate applications submitted for national postdoctoral support.
- **Member of CONACYT's Graduate Program Evaluation Committee, 2009**
Certification granted by the Mexican National Council for Science and Technology to evaluate proposals submitted to the National Contest of Quality Graduate Programs.
- **Evaluation Committee Member, March 2009**
2008 UANL Research Award, Exact Sciences Area
- **Member of CONACYT's Graduate Fellowship Program Evaluation Committee, 2008**
Certification granted by the Mexican National Council for Science and Technology to evaluate applications for modifying graduate study fellowships, Winter 2008
- **Member of CONACYT's Graduate Fellowship Program Evaluation Committee, 2008**
Certification granted by the Mexican National Council for Science and Technology to evaluate applications for modifying graduate study fellowships, Fall 2008
- **Member of CONACYT's Graduate Program Evaluation Committee, 2007**
Certification granted by the Mexican National Council for Science and Technology to evaluate proposals submitted to the National Contest of Quality Graduate Programs.
- **Evaluation Committee Member, March 2004**
2003 UANL Research Award, Engineering and Technology Area
- **Project Evaluation Committee Member, 2004-2005**
UANL PAICyT, Applied Sciences Area
- **External Evaluator, April 2003**
2003 Faculty Ranking, Institutional Research Dept., Facultad Católica de Química e Ingeniería Fray Rogelio Bacon, Rosario, Argentina.
- **Evaluation Committee Member, March 2003**
2002 UANL Research Award, Engineering and Technology Area
- **Member of CONACYT Registry of Certified Reviewers, 2002 - 2005, 2005 -**
Nation-wide certification granted by the Mexican National System for Scientific and Technological Evaluation to evaluate research project proposals in the Engineering area, No. RCEA-07-8798.
- **Project Evaluation Committee Member, 2002-2003**
UANL PAICyT, Applied Sciences Area

- **Evaluation Committee Member, March 2002**
2001 UANL Research Award, Engineering and Technology Area
- **Evaluation Committee Member, March 2001**
2000 UANL Research Award, Exact Sciences Area

Conference Program Committees

- **Program Committee Member, 2010**
15th Annual International Conference on Industrial Engineering Theory, Applications, and Practice, Mexico City, Mexico.
- **Program Committee Member, 2010**
II International Conference on Computation and Telecommunications (COMTEL'10), Lima, Peru.
- **Program Committee Member, 2010**
VII Spanish Conference on Metaheuristics, Evolutionary and Bioinspired Algorithms (MAEB), Valencia, Spain.
- **Program Committee Member, 2010**
II Iberian-American Meeting on Operations Research and Management Science (IOCA), Monterrey, Mexico.
- **Program Committee Member, 2010**
XV Latin-American Conference on Operations Research and Systems (CLAIO), Buenos Aires, Argentina.
- **Program Committee Member, 2009**
I International Conference on Computation and Telecommunications (COMTEL'09), Lima, Peru.
- **Program Committee Member, 2009**
Workshop on Intelligent Metaheuristics for Logistics Planning, Sevilla, Spain.
- **Program Committee Member, 2009**
4th Iberian-American Meeting on Multicriteria Evaluation and Decision-Making (REDM), Zapopan, México.
- **Program Committee Member, 2009**
III Latin-Ibero-American Workshop on Operations Research (TLAIO), Acapulco, Mexico.
- **Program Committee Member, 2009**
XIII Latin-American Summer School on Operations Research (ELAVIO), El Fuerte, Mexico.
- **Program Committee Member, 2009**
VI Spanish Conference on Metaheuristics, Evolutionary and Bioinspired Algorithms (MAEB), Malaga, Spain.
- **Program Committee Member, 2008**
XIII Latin-American Summer School on Operations Research (ELAVIO), Lima, Peru.
- **Program Committee Member, 2007**
3rd Iberian-American Meeting on Multicriteria Evaluation and Decision-Making (REDM), Culiacán, México.
- **Program Committee Member, 2007**
I Meeting on Evolutionary Algorithms and Metaheuristics (JAEM), Zaragoza, Spain.
- **Program Committee Member, 2007**
VI International Conference on Operational Research for Development (ICORD), Fortaleza, Brazil.

- **Program Committee Member, 2007**
XII Latin-American Summer School on Operations Research (ELAVIO), Rio de Janeiro, Brazil.
- **Program Committee Member, 2007**
V Spanish Conference on Metaheuristics, Evolutionary and Bioinspired Algorithms (MAEB), Tenerife, Spain.
- **Program Committee Member, 2006**
XIII Latin-American Conference on Operations Research and Systems (CLAIO), Montevideo, Uruguay.
- **Program Committee Member, 2006**
VI International Seminar on Systems Engineering (SIIS), Cozumel, México.
- **International Scientific Committee Member, 2005**
5th WSEAS International Conference on Systems Theory and Scientific Computation (ISTASC'05), Malta.
- **Program Committee Member, 2005**
Mexican International Conference on Artificial Intelligence (MICAI), Monterrey, México.
- **Program Committee Member, 2005**
Mexican International Conference on Computer Science (ENC'05), Puebla, México.
- **Program Committee Member, 2004**
XII Latin-American Conference on Operations Research and Systems (CLAIO), Havana, Cuba.
- **Program Committee Member, 2004**
Mexican International Conference on Computer Science (ENC'04), Colima, México.
- **Program Committee Member, 2004**
Mexican International Conference on Artificial Intelligence (MICAI), México City, México.
- **Program Committee Member, 2004**
X Latin-American Summer School on Operations Research (ELAVIO), Montevideo, Uruguay.
- **Advisory Committee Member, 2002**
Mexican International Conference on Artificial Intelligence (MICAI), Mérida, México.
- **Program Committee Member, 2002**
XI Latin-American Conference on Operations Research and Systems (CLAIO), Concepción, Chile.
- **Program Committee Member, September 2000**
X Latin-American Conference on Operations Research and Systems (CLAIO), México City.
- **Program Committee Member, January 2000**
7th INFORMS Computing Society Conference, Cancún, México.

PUBLICATIONS

Work in Progress

- [A divide-and-conquer approach to commercial territory design](#)
M. A. Salazar-Aguilar, J. L. González-Velarde, and R. Z. Ríos Mercado
December 2010 (submitted to *Cys*)

- Commercial territory design for a distribution firm with new constructive and destructive heuristics
J. Cano-Belmán, R. Z. Ríos Mercado, and M. A. Salazar-Aguilar
October 2010 (submitted to *IJCIS*)
- Multiobjective scatter search for a commercial territory design problem
M. A. Salazar-Aguilar, R. Z. Ríos Mercado, J. L. González-Velarde, and J. Molina
October 2010 (submitted to *AOR*)
- A GRASP with strategic oscillation for a commercial territory design problem with a routing budget constraint
J. C. Salazar-Acosta and R. Z. Ríos-Mercado
July 2010 (submitted)
- A GRASP for territory design planning under routing cost considerations
J. C. Salazar-Acosta and R. Z. Ríos-Mercado
July 2010 (submitted)
- GRASP strategies for a bi-objective territory design problem
M. A. Salazar-Aguilar, R. Z. Ríos Mercado, and J. L. González-Velarde
February 2010 (submitted to *Joh*)
- Operations Research and Systems (ALIO-INFORMS)
R. Z. Ríos Mercado, E. Fernández, L. Pradenas, and J. L. González-Velarde
Springer, January 2010 (in progress)
- Just-in-Time Systems
Y. A. Ríos-Solís and R. Z. Ríos Mercado
Springer, September 2009 (in progress)
- Computational experience with a reactive GRASP for a large scale commercial territory design problem from the beverage distribution industry
R. Z. Ríos Mercado
February 2008 (submitted)
- Un método de reducción eficiente para problemas de optimización de redes de transporte de gas natural
R. Z. Ríos Mercado
November 2007 (submitted)

Books

1. Heuristic Research: Advances and Applications
R. Z. Ríos-Mercado (editor)
Special issue of *Journal of Heuristics*, Vol. 15, No. 2, ISSN: 01381-1231. Springer, Norwell, 2009
2. Operations Research Advances in Latin America
M. G. Baldoquín, H. Cancela, R. Z. Ríos-Mercado y M. E. Urquhart (editors)
Special issue of *Annals of Operations Research*, Vol. 169, ISSN: 0254-5330. Springer, Norwell, 2009
3. Operations Research and Systems (CLAIO XII)
S. Allende, M. A. Osorio, R. Z. Ríos-Mercado, and J. Ruckmann (editors)
Special issue of *Annals of Operations Research*, Vol. 157, ISSN: 0254-5330. Springer, Norwell, 2008
4. JAMDS 10th Anniversary Special Issue
Mahyar A. Amouzegar, Khosrow Moshirvaziri, and R. Z. Ríos-Mercado (editors)

Special issue of *Journal of Applied Mathematics and Decision Sciences*, Vol. 2006, ISSN: 1173-9126. Hindawi Publishing, New York, 2006

5. *Latin-Ibero-American Conference on Operations Research (CLAIO XI): An International Conference of Current Theory and Practice*
L. Pradenas, R. Z. Ríos-Mercado, J. A. Ferland, R. Scherer, P. Michelon, and N. Maculan (editors)
Special issue of *Annals of Operations Research*, Vol. 138, ISSN: 0254-5330. Springer, Norwell, 2005
6. *Operations Research and Systems (CLAIO 2000). Part II: Algorithms, Heuristics, and Energy Markets*
R. Z. Ríos-Mercado, M. A. Osorio-Lama, L. B. Morales, and F. Maldonado (editors)
Special issue of *Annals of Operations Research*, Vol. 117, ISSN: 0254-5330. Kluwer, Boston, 2002.
7. *Operations Research and Systems (CLAIO 2000). Part I: Probability and Mathematical Programming*
R. Z. Ríos-Mercado, M. A. Osorio-Lama, L. B. Morales, and F. Maldonado (editors)
Special issue of *Annals of Operations Research*, Vol. 116, ISSN: 0254-5330. Kluwer, Boston, 2002.
8. *Integer Programming and Combinatorial Optimization: Proceedings of the 6th International IPCO Conference*
R. E. Bixby, E. A. Boyd, and R. Z. Ríos-Mercado (editors)
Lecture Notes in Computer Science, Vol. 1412, ISBN: 3-540-64590-X. Springer-Verlag, Berlin, 1998

Book Chapters and Contributions

9. *A hybrid meta-heuristic approach for natural gas network optimization*
C. Borraz-Sánchez and R. Z. Ríos-Mercado
In M. J. Blesa, C. Blum, A. Roli, and M. Sampels (editors), *Hybrid Metaheuristics*, Lecture Notes in Computer Science, Vol. 3636, pp. 54-65, ISBN: 3-540-28535-0. Springer, Berlin, Germany, 2005.
10. *Computational experience with a GRG method for minimizing fuel consumption on cyclic natural gas networks*
H. J. Flores-Villarreal and R. Z. Ríos Mercado
In N. E. Mastorakis, I. A. Stathopoulos, C. Manikopoulos, G. E. Antoniou, V. M. Mladenov, and I. F. Gonos (editors), *Computational Methods in Circuits and Systems Applications*, pages 90-94, ISBN: 960-8052-88-2. WSEAS Press, Athens, Greece, 2003.
11. *Natural gas pipeline optimization*
R. Z. Ríos-Mercado
In P. M. Pardalos and M. G. C. Resende, editors, *Handbook of Applied Optimization*, Chapter 18.8.3, pages 813-825. Oxford University Press, New York, 2002
12. *Heuristics for minimum cost steady-state gas transmission networks*
S. Kim, R. Z. Ríos-Mercado, and E. A. Boyd
In M. Laguna and J. L. González-Velarde, editors, *Computing Tools for Modeling, Optimization and Simulation: Interfaces in Computer Science and Operations Research*, Chapter 11, pages 203-213. Kluwer, Boston, 2000

Journals

13. *New models for commercial territory design*
M. A. Salazar-Aguilar, R. Z. Ríos Mercado, and M. Cabrera-Ríos
Networks and Spatial Economics (forthcoming)
14. *A supply chain design problem with facility location and bi-objective transportation choices*
E. Olivares-Benítez, J. L. González-Velarde, and R. Z. Ríos Mercado
TOP (forthcoming)
15. *A bi-objective programming model for designing compact and balanced territories in commercial districting*

M. A. Salazar-Aguilar, R. Z. Ríos Mercado, and J. L. González-Velarde
Transportation Research Part C: Emerging Technologies (forthcoming)

16. [A novel maximum dispersion territory design model arising in the implementation of the WEEE-directive](#)
E. Fernández, J. Kalcsics, S. Nickel, and R. Z. Ríos-Mercado
Journal of the Operational Research Society, 61(3):503-514, 2010
17. [A scatter search based hyper-heuristic for sequencing a mixed-model assembly line](#)
J. Cano-Belmán, R. Z. Ríos Mercado, and J. Bautista
Journal of Heuristics, 16(6):749-770, 2010
18. [Improving the operation of pipeline systems on cyclic structures by tabu search](#)
C. Borraz-Sánchez and R. Z. Ríos-Mercado
Computers & Chemical Engineering, 33(1):58-64, 2009
19. [A reactive GRASP for a commercial territory design problem with multiple balancing requirements](#)
R. Z. Ríos-Mercado and E. Fernández
Computers & Operations Research, 36(3):755-776, 2009
20. [Efficient operation of natural gas transmission systems: A network-based heuristic for cyclic structures](#)
R. Z. Ríos-Mercado, S. Kim, and E. A. Boyd
Computers & Operations Research, 33(8):2323-2351, 2006
21. [Optimal design of gating systems by gradient search methods](#)
C. E. Esparza, M. P. Guerrero-Mata, and R. Z. Ríos-Mercado
Computational Materials Science, 36(4):457-467, 2006
22. [Solving a natural gas cash-out bilevel program by a penalty function method](#)
V. V. Kalashnikov and R. Z. Ríos-Mercado
Optimization and Engineering, 7(4):403-420, 2006
23. [Discrete bilevel programming: Application to a natural gas cash-out problem](#)
S. Dempe, V. V. Kalashnikov, and R. Z. Ríos-Mercado
European Journal of Operational Research, 166(2):469-488, 2005
24. [A non-sequential dynamic programming approach for natural gas network optimization](#)
C. Borraz-Sánchez and R. Z. Ríos-Mercado
WSEAS Transactions on Systems, 3(4):1384-1389, 2004
25. [The flow shop scheduling polyhedron with setup times](#)
R. Z. Ríos-Mercado and J. F. Bard
Journal of Combinatorial Optimization, 7(3):291-318, 2003
26. [A reduction technique for natural gas transmission network optimization problems](#)
R. Z. Ríos-Mercado, S. Wu, L. R. Scott, and E. A. Boyd
Annals of Operations Research, 117(1-4):217-234, 2002
27. [Model relaxations for the fuel cost minimization of steady-state gas pipeline networks](#)
S. Wu, R. Z. Ríos-Mercado, E. A. Boyd, and L. R. Scott
Mathematical and Computer Modelling, 31(2-3):197-220, 2000
28. [A branch-and-bound algorithm for permutation flow shops with sequence-dependent setup times](#)
R. Z. Ríos-Mercado and J. F. Bard
IIE Transactions, 31(8):721-731, 1999
29. [An enhanced TSP-based heuristic for makespan minimization in a flow shop with setup times](#)
R. Z. Ríos-Mercado and J. F. Bard

Journal of Heuristics, 5(1):57-74, 1999

30. [Computational experience with a branch-and-cut algorithm for flowshop scheduling with setups](#)
R. Z. Ríos-Mercado and J. F. Bard
Computers & Operations Research, 25(5):351-366, 1998

31. [Heuristics for the flow line problem with setup costs](#)
R. Z. Ríos-Mercado and J. F. Bard
European Journal of Operational Research, 110(1):76-98, 1998

Magazine Articles

32. [Uso de búsqueda tabú en la solución del problema de asignación cuadrática](#)
D. R. Quevedo Orozco and R. Z. Ríos Mercado
Ingenierías, 13(48):40-48, 2010. In Spanish. Translation: "Using tabu search for solving the quadratic assignment problem"
33. [Técnicas avanzadas de optimización en sistemas de transporte de gas natural dinámica](#)
R. Z. Ríos Mercado and C. Borraz Sánchez
Ciencia UANL, 12(4):438-450, 2009. In Spanish. Translation: "Advanced optimization techniques in natural gas transport"
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J. R. Maldonado Flores and R. Z. Ríos Mercado

In V. Campos, A. Duarte, M. Gallego, F. Gortázar, and R. Martí (editors), *Proceedings of the VII Spanish Conference on Metaheuristics, Evolutionary and Bioinspired Algorithms*, pp. 751-757. ISBN: 978-84-92812-58-5. Valencia, Spain, September 2010 (in Spanish)

50. GRASP strategies for a bi-objective commercial territory design problem

M. A. Salazar-Aguilar, R. Z. Ríos-Mercado, and J. L. González-Velarde

In B. Melián Batista, J. A. Moreno Pérez, and E. Carrizosa Priego (editors), *Proceedings of the Workshop on Intelligent Metaheuristics for Logistic Planning (MHIPL)*, pp. 63-74. Sevilla, Spain, November 2009

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M. A. Salazar-Aguilar, R. Z. Ríos-Mercado, J. L. González-Velarde, and J. Molina

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D. L. Huerta-Muñoz, R. Z. Ríos-Mercado, and R. Ruiz
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In *Proceedings of the XII Latin-Ibero-American Conference on Operations Research and Systems*, paper T062. Havana, Cuba, October 2004
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In *Proceedings of the International Applied Business Research Conference*, paper 352, pages 1-7. Acapulco, México, March 2003
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83. On solving the flow line scheduling problem with setup costs

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86. Solución de la Ecuación de Transferencia de Calor Bidimensional en Estado Estable por el Método de Elementos Finitos

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Technical Reports

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M. A. Salazar-Aguilar, J. L. González-Velarde, and R. Z. Ríos Mercado

Technical Report PISIS-2010-05, Graduate Program in Systems Engineering, UANL, San Nicolás de los Garza, México, December 2010

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111. [Simulador térmico 2-D: Proceso soplo-soplo, lado bombillo](#)
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116. [Solución de sistemas de ecuaciones lineales algebraicas de alto orden](#)
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Technical Report, Vitro Tec, Monterrey, México, April 1987. In Spanish. Translation: "Solution of symmetric large-scale systems of linear algebraic equations"

TALKS

Invited Talks, Seminars

1. [Territory design planning for the recycling of electric and electronic goods: A modeling framework and GRASP-based heuristics](#)
R. Z. Ríos-Mercado, E. Fernández, J. Kalcsics, and S. Nickel
Invited talk, 9th US-Mexico Workshop on Optimization and Applications, Oaxaca, Mexico, 06 January 2011.
2. [Efficient territory design planning by a novel location-allocation-improvement algorithm](#)
R. Z. Ríos Mercado, A M. Álvarez, K. de Alba, J. A. Segura-Ramiro
Invited talk, I North American Meeting on Industrial and Applied Mathematics (NAMIAM), Huatulco, Mexico, 09 December 2010.
3. [How to choose sentimental partner by math and computing](#)
R. Z. Ríos Mercado
17th Science and Technology National Week at UANL, San Nicolás de los Garza, México, 28 October 2010.
4. [Metaheuristics for a maximum dispersion territory design problem](#)
R. Z. Ríos Mercado
FCFM, UANL, San Nicolás de los Garza, México, 18 October 2010.
5. [Intelligent algorithm development for optimization problems: A case study in territorial systems](#)
R. Z. Ríos Mercado
Computer Science Seminar Series, FCFM, UANL, San Nicolás de los Garza, México, 09 October 2010.
6. [An integer programming model for a maximum dispersion territory design problem](#)
R. Z. Ríos Mercado
FCFM, UANL, San Nicolás de los Garza, México, 06 October 2010.
7. [Efficient planning of territorial systems in the bottled beverage distribution industry by advanced heuristic techniques](#)
R. Z. Ríos Mercado
Mathematics Department Seminar Series, University of Lleida, Lleida, Spain, 15 September 2010.
8. [How to choose sentimental partner by math and computing](#)
R. Z. Ríos Mercado
PISIS Summer Seminar Series, FIME, UANL, San Nicolás de los Garza, México, 06 August 2010.
9. [Dynamic programming and its application to optimization problems](#)
R. Z. Ríos Mercado
FCFM, UANL, San Nicolás de los Garza, México, 19 May 2010.

10. [Improving the efficiency of natural gas transport by a tabu search and dynamic programming hybrid algorithm](#)
R. Z. Ríos-Mercado and C. Borraz-Sánchez
Supply Chain group seminar series, Center for Quality and Manufacturing, Monterrey Tech, Monterrey, 17 November 2009.
11. [Dynamic programming and its application to optimization problems](#)
R. Z. Ríos Mercado
FCFM, UANL, San Nicolás de los Garza, México, 13 November 2009.
12. [Efficient planning of territorial systems](#)
R. Z. Ríos Mercado
Mathematics Department Seminar Series, Instituto Tecnológico Autónomo de México, México City, 06 November 2009.
13. [On marriage stability problems](#)
R. Z. Ríos Mercado
Mathematics Department, Instituto Tecnológico Autónomo de México, México City, 05 November 2009.
14. [How to choose your significant other by using math and computing](#)
R. Z. Ríos Mercado
FCFM, UANL, San Nicolás de los Garza, Mexico, 30 October 2009.
15. [How to choose your significant other by using math and computing](#)
R. Z. Ríos Mercado
56th FCFM Anniversary Conference, UANL, San Nicolás de los Garza, Mexico, 06 October 2009.
16. [Tutorial: Modeling and solution for territory planning systems](#)
R. Z. Ríos Mercado
Invited (3 h) tutorial, XIV Latin-American Summer School on Operations Research (ELAVIO'09), El Fuerte, Mexico, 14 August 2009.
17. [The fascinating road in a scientist education: Back to the future IV](#)
R. Z. Ríos Mercado
PISIS Summer Seminar Series, FIME, UANL, San Nicolás de los Garza, México, 07 August 2009.
18. [An integer programming model for a maximum dispersion problem in the recollection of electric appliances](#)
R. Z. Ríos Mercado
Invited talk, I SMM-RSME Joint Meeting, Oaxaca, Mexico, 22 July 2009.
19. [Modeling territory design problems with integer programming](#)
R. Z. Ríos Mercado
FIME, UANL, San Nicolás de los Garza, México, 25 May 2009.
20. [Modeling territory design problems with integer programming](#)
R. Z. Ríos Mercado
FIME, UANL, San Nicolás de los Garza, México, 25 May 2009.
21. [Operations research techniques for optimal commercial territory design](#)
R. Z. Ríos Mercado
FCFM, UANL, San Nicolás de los Garza, México, 25 May 2009.
22. [Operations research techniques for optimal commercial territory design](#)
R. Z. Ríos Mercado
FCFM, UANL, San Nicolás de los Garza, México, 25 May 2009.

23. [Modeling territory design problems with integer programming](#)
R. Z. Ríos Mercado
FIME, UANL, San Nicolás de los Garza, México, 19 May 2009.
24. [Efficient planning of territorial systems by an advanced location-allocation-local search method](#)
R. Z. Ríos Mercado, J. A. Segura, A. M. Álvarez, and K. de Alba
Seminar series, Department of Statistics and Operations Research, Universitat Politècnica de Catalunya, Barcelona, Spain, April 2009.
25. [The maximum dispersion territory design problem: An application in the recollection of waste electric and electronic equipment](#)
R. Z. Ríos Mercado, E. Fernández, J. Kalcsics, and S. Nickel
Seminar series, Department of Applied Economics, Universidad de Burgos, Burgos, Spain, April 2009.
26. [Using spreadsheets to model and solve linear programs](#)
R. Z. Ríos-Mercado
Workshop, IX Conference on Industrial Engineering, Instituto Tecnológico de Culiacán, Culiacán, Mexico, 13 March 2009.
27. [Decision making by operations research techniques](#)
R. Z. Ríos-Mercado
IX Conference on Industrial Engineering, Instituto Tecnológico de Culiacán, Culiacán, Mexico, 12 March 2009.
28. [System optimization: Challenges and perspective](#)
R. Z. Ríos Mercado
Graduate Research Colloquium, FIME, UANL, San Nicolás de los Garza, México, 26 February 2009.
29. [Efficient student-supervising professor assignment: A successful application of the stable marriage problem](#)
R. Z. Ríos-Mercado
Advanced Materials Research Center, Apodaca, Mexico, 11 February 2009.
30. [Efficient territory design planning by a novel location-allocation scheme](#)
R. Z. Ríos-Mercado (*), J. A. Segura Ramiro, A. M. Álvarez, and K. de Alba
Dell Operations Research/Industrial Engineering Seminar Series, U. of Texas, Austin, 24 November 2008.
31. [Usage of operations research techniques for the efficient resolution of territory design problems](#)
R. Z. Ríos Mercado
Meeting on Optimization, Numerical Analysis, and Applications. Benemérita Universidad Autónoma de Puebla, Puebla, Mexico, November 2008.
32. [Operations research techniques for optimal commercial territory design](#)
R. Z. Ríos Mercado
FCFM, UANL, San Nicolás de los Garza, México, November 2008.
33. [Research opportunities on mathematics and computer science in industry](#)
R. Z. Ríos Mercado
55th FCFM Anniversary Conference, UANL, San Nicolás de los Garza, Mexico, 07 October 2008.
34. [The maximum dispersion territory design problem](#)
E. Fernández, J. Kalcsics, S. Nickel y R. Z. Ríos-Mercado (*)
PISIS Seminar Series, FIME, UANL, San Nicolás de los Garza, México, 02 October 2008.
35. [How to choose the girl or boy you like by using math and computing](#)
R. Z. Ríos Mercado

"Sunday Science" Program of the Mexican Academy of Sciences, Torres Bodet Library, Aguascalientes, 26 September 2008.

36. [Efficient territory design planning by an advanced location-allocation method](#)
R. Z. Ríos Mercado, J. A. Segura Ramiro, A. M. Álvarez y K. de Alba
Academic Program in Industrial Engineering, UPA, Aguascalientes, 25 September 2008.
37. [Operations research techniques for optimal commercial territory design](#)
R. Z. Ríos Mercado
Academic Program in Industrial Engineering, UPA, Aguascalientes, 25 September 2008.
38. [Efficient territory design planning by an advanced location-allocation method](#)
R. Z. Ríos Mercado, J. A. Segura Ramiro, A. M. Álvarez y K. de Alba
School of Engineering, ITESM, Aguascalientes, 25 September 2008.
39. [Marriage stability problems from a scientific perspective](#)
R. Z. Ríos Mercado
PISIS Summer Seminar Series, FIME, UANL, San Nicolás de los Garza, México, August 2008.
40. [The fascinating road in a scientist education: Back to the future IV](#)
R. Z. Ríos Mercado
PISIS Summer Seminar Series, FIME, UANL, San Nicolás de los Garza, México, July 2008.
41. [Industrial applications of linear algebra: Sparse matrices](#)
R. Z. Ríos Mercado
FCFM, UANL, San Nicolás de los Garza, México, November 2007.
42. [Dynamic programming and its application to optimization problems](#)
R. Z. Ríos Mercado
FCFM, UANL, San Nicolás de los Garza, México, November 2007.
43. [Industrial applications of linear algebra: Sparse matrices](#)
R. Z. Ríos Mercado
FCFM, UANL, San Nicolás de los Garza, México, November 2007.
44. [Industrial applications of linear algebra: Sparse matrices](#)
R. Z. Ríos Mercado
FCFM, UANL, San Nicolás de los Garza, México, November 2007.
45. [The key importance of math: The applied side of the force](#)
R. Z. Ríos Mercado
Plenary speaker, XL Mexican Mathematical Society Conference, Universidad Autónoma de Nuevo León, San Nicolás de los Garza, México, October 2007.
46. [On marriage stability problems](#)
R. Z. Ríos Mercado
Plenary speaker, XL Mexican Mathematical Society Conference, Universidad Autónoma de Nuevo León, San Nicolás de los Garza, México, October 2007.
47. [The fascinating road in a scientist education](#)
R. Z. Ríos Mercado
PISIS Summer Seminar Series, FIME, UANL, San Nicolás de los Garza, México, July 2007.
48. [Industrial applications of linear algebra: Sparse matrices](#)
R. Z. Ríos Mercado
FCFM, UANL, San Nicolás de los Garza, México, May 2007.

49. [Improving the quality of sales territory design in a distribution firm by a reactive GRASP method](#)
R. Z. Ríos Mercado
Supply Chain group seminar series, Center for Quality and Manufacturing, ITESM, Monterrey, March 2007.
50. [Efficient sales territory design: A successful case study of metaheuristic optimization in a beverage distribution firm](#)
R. Z. Ríos Mercado
Seminar Series honoring the 40th Anniversary of OR Graduate Program, School of Engineering, UNAM, Mexico City, November 2006.
51. [Industrial applications of linear algebra: Sparse matrices](#)
R. Z. Ríos Mercado
FCFM, UANL, San Nicolás de los Garza, México, November 2006.
52. [Dynamic programming and its application to optimization problems](#)
R. Z. Ríos Mercado
FCFM, UANL, San Nicolás de los Garza, México, October 2006.
53. [Advanced metaheuristics for flow shop scheduling problems](#)
R. Z. Ríos Mercado
Mathematics Seminar, FCFM, UANL, San Nicolás de los Garza, México, October 2006.
54. [Optimization of industrial systems](#)
R. Z. Ríos Mercado
Plenary speaker, XXXIX Mexican Mathematical Society Conference, Universidad Juárez Autónoma de Tabasco, Villahermosa, Tabasco, México, October 2006.
55. [Advanced metaheuristics for sales territory design](#)
R. Z. Ríos Mercado
PISIS Seminar Series, FIME, UANL, San Nicolás de los Garza, México, September 2006.
56. [Curiosities in the making of a scientist](#)
R. Z. Ríos Mercado
PISIS Summer Seminar Series, FIME, UANL, San Nicolás de los Garza, México, August 2006.
57. [Optimization of a sequence-dependent setup time flow shop by scatter search](#)
R. Z. Ríos Mercado
Seminar series, Department of Statistics, Operations Research, and Computing. Universidad de La Laguna, Tenerife, Spain, June 2006.
58. [Efficient operation of natural gas transportation systems](#)
R. Z. Ríos Mercado
Seminar series, Department of Statistics and Operations Research, Universitat Politècnica de Catalunya, Barcelona, Spain, March 2006.
59. [Decision-making problems in manufacturing systems](#)
R. Z. Ríos Mercado
FIME, UANL, San Nicolás de los Garza, México, May 2005.
60. [Decision-making problems in manufacturing systems](#)
R. Z. Ríos Mercado
FIME, UANL, San Nicolás de los Garza, México, May 2005.
61. [Decision-making problems in manufacturing systems](#)
R. Z. Ríos Mercado
FCFM, UANL, San Nicolás de los Garza, México, May 2005.

62. [Decision-making problems in manufacturing systems](#)
R. Z. Ríos Mercado
FCFM, UANL, San Nicolás de los Garza, México, May 2005.
63. [Solving decision-making problems under uncertainty by stochastic optimization](#)
R. Z. Ríos Mercado
FCFM, UANL, San Nicolás de los Garza, México, April 2005.
64. [Applying scatter search to a machine scheduling problem](#)
R. Z. Ríos Mercado
PISIS Seminar Series, FIME, UANL, San Nicolás de los Garza, México, August 2004.
65. [Dynamic programming and its application to optimization problems](#)
R. Z. Ríos Mercado
PISIS Seminar Series, FIME, UANL, San Nicolás de los Garza, México, February 2004.
66. [On marriage stability problems](#)
R. Z. Ríos Mercado
50th FCFM Anniversary Conference, UANL, Campus Mederos, Monterrey, México, 14 October 2003.
67. [Decision-making problems in manufacturing systems](#)
R. Z. Ríos Mercado
1st Graduate Research Colloquium, FIME, UANL, San Nicolás de los Garza, México, 09 October 2003.
68. [Modeling and solution of decision-making problems](#)
R. Z. Ríos Mercado
7th Symposium on Informatics, School of Accounting and Management, Universidad Autónoma del Estado de México, Toluca, México, 03 October 2003.
69. [Optimal sequencing of flow shops in manufacturing systems](#)
R. Z. Ríos Mercado
Seminar Series, School of Engineering, UNAM, México DF, 02 October 2003.
70. [Scientific support to decision-making problems](#)
R. Z. Ríos Mercado
1st FIME Symposium on Operations Research and Systems (IO-FIME), Facultad de Ingeniería Mecánica y Eléctrica, UANL, San Nicolás de los Garza, NL, México, 01 October 2003.
71. [The stable marriage problem](#)
R. Z. Ríos Mercado
PISIS Seminar Series, FIME, UANL, San Nicolás de los Garza, México, August 2003.
72. [Curiosities in the making of a scientist](#)
R. Z. Ríos Mercado
PISIS Seminar Series, FIME, UANL, San Nicolás de los Garza, México, July 2003.
73. [Scientific support to decision-making problems](#)
R. Z. Ríos Mercado
1st FIME Conference on Engineering Applied Knowledge, Facultad de Ingeniería Mecánica y Eléctrica, UANL, San Nicolás de los Garza, México, May 2003.
74. [The key importance of math: The applied side of the force](#)
R. Z. Ríos Mercado
Universidad de Monterrey, San Pedro Garza García, NL, México, April 2003.
75. [The stable marriage problem and its application to decision making](#)

R. Z. Ríos Mercado

13th National School on Optimization and Numerical Analysis (ENOAN), Saltillo, México, March 2003.

76. [Solving a transportation problem under uncertainty by stochastic optimization](#)
R. Z. Ríos Mercado
PISIS Seminar Series, FIME, UANL, San Nicolás de los Garza, México, 03 March 2003.
77. [Industrial applications of linear algebra: Sparse matrices](#)
R. Z. Ríos Mercado
Universidad de Monterrey, San Pedro Garza García, NL, México, November 2002.
78. [Computational issues in decision-making problems](#)
R. Z. Ríos Mercado
10th ITS Symposium on Computer Systems, Instituto Tecnológico de Saltillo, México, October 2002.
79. [Exploiting effectively the mathematical structure of a scheduling problem in manufacturing systems](#)
R. Z. Ríos Mercado
PISIS Seminar Series, FIME, UANL, San Nicolás de los Garza, Mexico, September 2002.
80. [The stable marriage problem and its application to decision making](#)
R. Z. Ríos Mercado
FCFM, UANL, San Nicolás de los Garza, México, May 2002.
81. [Solving decision-making problems under uncertainty by stochastic optimization](#)
R. Z. Ríos Mercado
12th ITNL Conference on Industrial Engineering, Instituto Tecnológico de Nuevo Laredo, México, April 2002.
82. [On marriage stability problems](#)
R. Z. Ríos Mercado
FCFM, UANL, San Nicolás de los Garza, México, February 2002.
83. [The stable marriage problem](#)
R. Z. Ríos Mercado
PISIS Seminar Series, FIME, UANL, San Nicolás de los Garza, México, February 2002.
84. [Industrial applications of linear algebra: Sparse matrices](#)
R. Z. Ríos Mercado
FCFM, UANL, San Nicolás de los Garza, México, November 2001.
85. [Modeling decision-making problems through operations research](#)
R. Z. Ríos Mercado
Universidad Autónoma de Tamaulipas, Cd. Mante, México, October 2001.
86. [Modeling decision-making problems through stochastic programming](#)
R. Z. Ríos Mercado
FIME, UANL, San Nicolás de los Garza, México, September 2001.
87. [Industrial applications of linear algebra: Sparse matrices](#)
R. Z. Ríos Mercado
PISIS Seminar Series, FIME, UANL, San Nicolás de los Garza, México, August 2001.
88. [Modeling decision-making problems through operations research](#)
R. Z. Ríos Mercado
FCFM, UANL, San Nicolás de los Garza, México, June 2001.
89. [Modeling decision-making problems through operations research](#)

- R. Z. Ríos Mercado
FCFM, UANL, San Nicolás de los Garza, México, June 2001.
90. [Industrial applications of linear algebra: Sparse matrices](#)
R. Z. Ríos Mercado
FCFM, UANL, San Nicolás de los Garza, México, May 2001.
91. [Heuristics for optimal sequencing of flow lines in manufacturing environments](#)
R. Z. Ríos Mercado
Center for Artificial Intelligence, Monterrey Tech, Monterrey, México, April 2001.
92. [Heuristics for scheduling flow lines with setup times](#)
R. Z. Ríos Mercado
PISIS Seminar Series, Facultad de Ingeniería Mecánica y Eléctrica, UANL, San Nicolás de los Garza, México, April 2001.
93. [Optimal sequencing of flow shops in manufacturing systems](#)
R. Z. Ríos Mercado
11th ITNL Conference on Industrial Engineering, Instituto Tecnológico de Nuevo Laredo, México, March 2001.
94. [Successful Graduates](#)
R. Z. Ríos Mercado
Panel, Facultad de Ciencias Físico-Matemáticas, UANL, San Nicolás de los Garza, México, November 2000.
95. [Optimal sequencing of flow shops in manufacturing systems](#)
R. Z. Ríos Mercado
Universidad del Norte, Monterrey, México, November 2000.
96. [Optimal sequencing of flow shops in manufacturing systems](#)
R. Z. Ríos Mercado
Facultad de Ciencias Físico-Matemáticas, UANL, San Nicolás de los Garza, México, September 2000.
97. [Optimal sequencing of flow shops in manufacturing systems](#)
R. Z. Ríos Mercado
Mathematics Department Seminar Series, Instituto Tecnológico Autónomo de México, México City, September 2000.
98. [Computational complexity: When an Optimization Problem is Easy or Hard to Solve](#)
R. Z. Ríos Mercado
PISIS Seminar Series, Facultad de Ingeniería Mecánica y Eléctrica, UANL, San Nicolás de los Garza, México, August 2000.
99. [The importance of mathematics and computing in forming human resources at the graduate level](#)
R. Z. Ríos Mercado
Facultad de Ciencias Físico-Matemáticas, UANL, San Nicolás de los Garza, México, November 1999.
100. [Computational complexity](#)
R. Z. Ríos Mercado
Scientific Summer for high school students, Facultad de Ingeniería Mecánica y Eléctrica, UANL, San Nicolás de los Garza, México, July 1999.
101. [Network optimization in the gas industry](#)
R. Z. Ríos Mercado
Center for Manufacturing Systems, Monterrey Tech, Monterrey, México, August 1997.

102. [On solving the flow line scheduling problem with setup costs](#)
R. Z. Ríos Mercado
Operations Research/Management Science Seminar Series, U. of Texas, Austin, March 1997.
103. [Applications of operations research in industry](#)
R. Z. Ríos Mercado
7th ITNL Conference on Industrial Engineering, Instituto Tecnológico de Nuevo Laredo, México, March 1997.
104. [Machine scheduling: Applications of combinatorial optimization](#)
R. Z. Ríos Mercado
Facultad de Ciencias Fisico-Matemáticas, UANL, San Nicolás de los Garza, México, April 1995.
105. [Computational experience with an interior point method code](#)
R. Z. Ríos Mercado
Center for Manufacturing Systems, Monterrey Tech, Monterrey, México, March 1993.
106. [Interior point methods for linear programming](#)
R. Z. Ríos Mercado
Facultad de Ciencias Fisico-Matemáticas, UANL, San Nicolás de los Garza, México, November 1992.

Paper Presentations at Conferences

107. [A dual bounding scheme for a territory design problem](#)
M. Elizondo, R. Z. Ríos-Mercado, and J. A. Díaz
INFORMS National Meeting, Austin, USA, November 2010.
108. [A location-allocation-local search procedure for territory design with multiple balance constraints](#)
R. Z. Ríos-Mercado
INFORMS National Meeting, Austin, USA, November 2010.
109. [Búsqueda tabú para un problema de diseño territorial con máxima dispersión](#)
J. R. Maldonado Flores and R. Z. Ríos Mercado
VII Spanish Conference on Metaheuristics, Evolutionary and Bioinspired Algorithms, Valencia, Spain, 7-10 September 2010.
110. [A GRASP for territory design planning under routing cost considerations](#)
J. C. Salazar-Acosta and R. Z. Ríos-Mercado
International Conference Operations Research "Mastering Complexity", Munich, Germany, 1-3 September 2010.
111. [Territory design with a routing constraint by iterated greedy local search](#)
R. Z. Ríos-Mercado, J. C. Salazar-Acosta, and R. Ruiz
SIAM Conference on Discrete Mathematics, Austin, USA, 14-17 June 2010.
112. [A new location-allocation-local search procedure for efficient territory design planning](#)
R. Z. Ríos Mercado
IIE Annual Conference and Expo 2010, Cancún, Mexico, 05-09 June 2010.
113. [A GRASP for a territory design problem with a routing requirement](#)
J. C. Salazar-Acosta and R. Z. Ríos Mercado
IIE Annual Conference and Expo 2010, Cancún, Mexico, 05-09 June 2010.
114. [A tabu search heuristic for a maximum dispersion territory design problem](#)
R. Z. Ríos Mercado, J. L. González, and J. Maldonado
IIE Annual Conference and Expo 2010, Cancún, Mexico, 05-09 June 2010.

115. [Dual bounds for a territory design problem](#)
M. Elizondo, R. Z. Ríos Mercado, J. Mesa y J. Díaz
IIE Annual Conference and Expo 2010, Cancún, Mexico, 05-09 June 2010.
116. [Efficient territory design planning by a planning novel location-allocation scheme](#)
A. M. Alvarez, R. Z. Ríos-Mercado, J. A. Segura-Ramiro, and K. de Alba
CORS-INFORMS International Meeting, Toronto, Canada, June 2009.
117. [Territory design planning for recycling of electric and electronic goods: A GRASP approach](#)
R. Z. Ríos-Mercado, E. Fernández, J. Kalcsics, and S. Nickel
CORS-INFORMS International Meeting, Toronto, Canada, June 2009.
118. [A heuristic for a market segmentation problem with multiple attributes](#)
D. L. Huerta-Muñoz, R. Z. Ríos-Mercado, R. Ruiz, A. Berrones, and E. Schaeffer
IIE Annual Conference and Expo 2009, Miami, EUA, 30 May-03 June 2009.
119. [Large scale territory design planning by reactive GRASP](#)
R. Z. Ríos-Mercado
IIE Annual Conference and Expo 2009, Miami, EUA, 30 May-03 June 2009.
120. [A location-allocation-local search heuristic for territory design planning](#)
R. Z. Ríos Mercado, J. A. Segura-Ramiro, A. M. Alvarez, and K. de Alba
6th International Conference on Computational Management Science, Geneva, Switzerland, May 2009.
121. [Computational experience with GRASP for a maximum dispersion territory design problem](#)
R. Z. Ríos-Mercado, E. Fernández, J. Kalcsics, and S. Nickel
European Chapter on Metaheuristics' Workshop on "Debating the future: New areas of application and innovative approaches". Porto, Portugal, April 2009.
122. [Operations research techniques for optimal commercial territory design](#)
R. Z. Ríos Mercado
XL Mexican Mathematical Society Conference, Universidad Autónoma de Nuevo León, San Nicolás de los Garza, México, October 2007.
123. [Computational experience with a reactive GRASP for a large scale commercial territory design problem](#)
R. Z. Ríos Mercado
8th EU/MEeting on Metaheuristics in the Service Industry. Stuttgart, Germany, October 2007.
124. [Solución heurística a un problema de diseño de territorios comerciales con restricciones de asignación conjunta mediante GRASP](#)
S. I. Caballero Hernández, R. Z. Ríos Mercado, and F. López
1st Spanish Meeting on Evolutionary Algorithms and Metaheuristics (JAEM'07). Zaragoza, Spain, 13-14 September 2007.
125. [A GRASP for a sales territory design problem with multiple balancing requirements](#)
R. Z. Ríos-Mercado and E. Fernández
3rd International Workshop on Freight Transportation and Logistics (Odysseus), Altea, Spain, 23-26 May 2006.
126. [An improved scatter search approach for makespan minimization in a flow shop with sequence-dependent setup times](#)
R. Z. Ríos Mercado and M. Laguna
5th ALIO/EURO Conference on Combinatorial Optimization, ENST, Paris, France, 26-28 October 2005.
127. [Usando GRASP para resolver un problema de definición de territorios de atención comercial](#)

- L. Vargas Suárez, R. Z. Ríos Mercado, and F. López
IV Spanish Conference on Metaheuristics, Evolutionary and Bioinspired Algorithms MAEB'05, Granada, Spain, 13-16 September 2005.
128. [A hybrid meta-heuristic approach for natural gas network optimization](#)
C. Borraz-Sánchez and R. Z. Ríos Mercado
2nd International Workshop on Hybrid Metaheuristics, Universitat Politècnica de Catalunya, Barcelona, Spain, 29-30 August 2005.
129. [A tabu search approach for minimizing fuel consumption on cyclic natural gas pipeline systems](#)
C. Borraz-Sánchez and R. Z. Ríos Mercado
XII Latin-Ibero-American Conference on Operations Research and Systems, Havana, Cuba, October 2004.
130. [Optimization of cyclic natural gas transmission systems by tabu search: A computational experience](#)
C. Borraz-Sánchez and R. Z. Ríos Mercado
International Conference on Cybernetics and Information Technologies, Systems and Applications, Orlando, July 2004.
131. [A Non-sequential Dynamic Programming Approach for Cyclic Natural Gas Pipeline Systems](#)
C. Borraz-Sánchez and R. Z. Ríos Mercado
CORS/INFORMS Joint International Meeting, Banff, Canada, May 2004.
132. [Natural gas transmission systems: An overview of optimization methods](#)
R. Z. Ríos Mercado
15th Annual POM Conference, Cancún, Mexico, May 2004.
133. [Computational experience with a GRG method for minimizing fuel consumption on cyclic natural gas networks](#)
H. J. Flores-Villarreal and R. Z. Ríos Mercado
7th WSEAS International Conference on Systems. Corfu, Greece, July 2003.
134. [A MINLP model for minimizing fuel consumption on natural gas pipeline networks](#)
D. Cobos-Zaleta and R. Z. Ríos-Mercado
11th Latin-Ibero-American Conference on Operations Research, Concepción, Chile, October 2002.
135. [Optimizing fuel consumption on gas transmission networks: Evaluation of a heuristic for cyclic systems](#)
R. Z. Ríos-Mercado, S. Kim, and E. A. Boyd
IEEE International Conference on Systems, Man, and Cybernetics, Tucson, October 2001.
136. [Natural gas pipeline optimization: The state of the art](#)
R. Z. Ríos-Mercado
INFORMS National Meeting, San Antonio, USA, November 2000.
137. [A network reduction technique for natural gas pipeline networks](#)
R. Z. Ríos-Mercado, S. Wu, E. A. Boyd, and L. R. Scott
10th Latin-American Conference on Operations Research and Systems. México City, September 2000.
138. [Heuristics for minimum cost steady-state gas transmission networks](#)
R. Z. Ríos-Mercado, S. Kim, and E. A. Boyd
Invited paper, 7th INFORMS Computing Society Conference, Cancún, México, January 2000.
139. [Evaluating model relaxations for least cost gas transmission networks](#)
R. Z. Ríos-Mercado, S. Wu, E. A. Boyd, and L. R. Scott
6th SIAM Conference on Optimization, Atlanta, May 1999.
140. [Lower bounds for fuel cost minimization on gas transmission networks](#)

R. Z. Ríos-Mercado

INFORMS National Meeting, Seattle, October 1998.

141. [Optimization of natural gas pipeline networks](#)
R. Z. Ríos-Mercado, E. A. Boyd, L. R. Scott, and S. Wu
SIAM Annual Meeting, Toronto, Canada, July 1998.
142. [Mathematical models for the marketing of natural gas pipeline networks](#)
R. Z. Ríos-Mercado, R. Elizondo, and E. A. Boyd
INFORMS National Meeting, Montreal, Canada, April 1998.
143. [Lower bounds for makespan minimization in a flow shop with setups](#)
R. Z. Ríos-Mercado and J. F. Bard
Invited paper, INFORMS National Meeting, Montreal, Canada, April 1998.
144. [Evaluating the quality of pipeline optimization algorithms](#)
R. Z. Ríos-Mercado, E. A. Boyd, L. R. Scott, and S. Wu
NSF Design and Manufacturing Grantees Conference, Monterrey, México, January 1998.
145. [A hybrid heuristic for flowshop scheduling with setups](#)
R. Z. Ríos-Mercado and J. F. Bard
INFORMS National Meeting, Dallas, October 1997.
146. [A branch-and-bound algorithm for flowshop scheduling with setups](#)
R. Z. Ríos-Mercado and J. F. Bard
INFORMS National Meeting, San Diego, May 1997.
147. [On solving the flow line problem with setup costs](#)
R. Z. Ríos-Mercado and J. F. Bard
2nd University of Texas Student Research Conference, U. of Texas, Austin, October 1996.
148. [New heuristics for the flow line problem with setup costs](#)
R. Z. Ríos-Mercado and J. F. Bard
1st University of Texas Student Research Conference, U. of Texas, Austin, November 1995.
149. [A greedy randomized adaptive search procedure for the flowshop problem with sequence-dependent setup times](#)
R. Z. Ríos-Mercado and J. F. Bard
Invited paper, INFORMS National Meeting, New Orleans, October 1995.
150. [An upper bounding scheme for a maximum dispersion territory design problem](#)
J. R. Maldonado-Flores and R. Z. Ríos-Mercado
SIAM Conference on Discrete Mathematics, Austin, USA, 14-17 June 2010.

STUDENT THESIS SUPERVISION

In progress (as Supervising Professor)

- Beatriz Adriana Rivera Aguilar (MSc), "*TBA*," Graduate Program in Systems Engineering, UANL.
- Carlos Beltrán Pérez (MSc), "*TBA*," Graduate Program in Systems Engineering, UANL.
- Carlos E. Quintero Ortega (MSc), "*TBA*," Graduate Program in Systems Engineering, UANL.
- Minerva A. Díaz Romero (MSc), "*Spatiot Optimization on Forestry Systems*," Graduate Program in Systems Engineering, UANL.
- Brenda Aide Peña Cantú (BSc), "*TBA*," Lic. (BSc) in Systems Administration, FIME, UANL.

Postdocs supervised

- Jaime Cano (2007-2008), *"Advanced Metaheuristics in Territory Design."* Graduate Program in Systems Engineering, UANL.

Chaired: Ph.D.

- Angélica Salazar (2010), *"Models, Algorithms, and Heuristics for Multiobjective Commercial Territory Design."* Graduate Program in Systems Engineering, UANL (co-chaired with Prof. José Luis González, CCM, ITESM.)
- Elias Olivares (2007), *"Capacitated Fixed Cost Facility Location Problem with Lead Time Choices."* Center for Quality and Manufacturing (CCM), ITESM (co-chaired with Prof. José Luis González, CCM, ITESM.)
- Carlos E. Esparza (2003), *"Optimización de un Sistema de Alimentación para el Llenado de Moldes con Aleaciones de Aluminio."* Graduate Program in Materials Engineering (DIMAT), UANL (co-chaired with Prof. Martha P. Guerrero, DIMAT, UANL.) In Spanish, translation: "Gating System Optimization for Mold Filling with Aluminum Alloys."

Chaired: M.Sc.

- Jabneel R. Maldonado (2010), *"Un Método de Búsqueda Tabú con Oscilación Estratégica para la Optimización de Diseño de Zonas de Recolección de Aparatos Electrodomésticos,"* Graduate Program in Systems Engineering, UANL. In Spanish, translation: "Tabu Search with Strategic Oscillation for Optimal Design of WEEE Recollection Zones."
- Mónica G. Elizondo (2010), *"Un Esquema de Acotamiento Dual para un Problema de Diseño Territorial,"* Graduate Program in Systems Engineering, UANL. In Spanish, translation: "A Dual Bounding Scheme for a Territory Design Problem."
- Juan C. Salazar (2009), *"Diseño de Territorios Comerciales con Costos de Ruteo,"* Graduate Program in Systems Engineering, UANL. In Spanish, translation: "Commercial Territory Design with Routing Costs."
- Diana L. Huerta (2009), *"Diseño de Planes Eficientes para la Segmentación de Clientes con Múltiples Atributos,"* Graduate Program in Systems Engineering, UANL. In Spanish, translation: "Efficient Planning Design of Multi-attribute Customer Segmentation."
- J. Ángel Segura (2008), *"Un Algoritmo de Localización-Asignación para el Diseño Eficiente de Planes Territoriales de Uso Comercial,"* Graduate Program in Systems Engineering, UANL. In Spanish, translation: "A Location-Allocation Algorithm for Efficient Territory Planning Design."
- Saúl I. Caballero (2008), *"Un Procedimiento de Búsqueda Miope Aleatorizada y Adaptativa para el Diseño Eficiente de Territorios de Atención Comercial con Requerimientos de Asignación Conjunta,"* M.Sc. in Systems Eng., Graduate Program in Systems Engineering, UANL. In Spanish, translation: "A GRASP for Efficient Design of a Commercial Territorial Design Problem with Joint Assignment Requirements."
- Leticia G. Vargas (2005), *"Un Procedimiento de Búsqueda Miope Adaptativa y Aleatorizada para la Definición de Territorios de Atención Comercial,"* M.Sc. in Systems Eng., Graduate Program in Systems Engineering, UANL. In Spanish, translation: "A GRASP for Designing Commercial Territories."
- Humberto J. Flores (2005), *"Operación Eficiente de Redes de Transporte de Gas Natural mediante el Método de Gradiente Reducido Generalizado,"* M.Sc. in Systems Eng., Graduate Program in Systems Engineering, UANL. In Spanish, translation: "Efficient Operation of Natural Gas Transmission Networks by the GRG Method." Winner of TECNOS Award to Best Master Thesis.
- Conrado Borraz (2004), *"Una Metodología de Solución basada en Programación Dinámica No Secuencial y Búsqueda Tabú para la Operación Eficiente de Sistemas de Transporte de Gas Natural en Estado Estable."* M.Sc. in Systems Eng., Graduate Program in Systems Engineering, UANL. In Spanish, translation: "A Solution Methodology based on Non-sequential Dynamic Programming and Tabu Search for the Efficient Operation of Steady-State Natural Gas Transportation Systems."
- Diana Cobos (2003), *"Modelos de Optimización Entera Mixta No Lineal en Sistemas de Transporte de Gas Natural."* M.Sc. in Systems Eng., Graduate Program in Systems Engineering, UANL. In Spanish, translation: "Mixed-Integer Nonlinear Programming Models in Natural Gas Transportation Systems."
- Yanet Villalobos (2002), *"Pre-procesamiento de un Problema de Optimización de Redes de Gas Natural."* M.Sc. in Systems Eng., Graduate Program in Systems Engineering, UANL. In Spanish, translation: "Pre-processing of a Natural Gas Network Optimization Problem."

Chaired: B.Sc.

- Nancy Solis (2008), "*Evaluación de la Calidad de Métodos de Optimización Exacta para Modelos de Diseño Territorial*," Lic. (BSc) in Mathematics, School of Physics and Mathematics, UANL. In Spanish, translation: "Evaluating the Quality of Exact Optimization Methods for Territory Design Models."

Committee Member / External Advisor

- Yadira I. Silva (M.Sc.), "*Planeación Justo a Tiempo: Soluciones Óptimas Mediante Reformulaciones Convexas*," Graduate Program in Systems Engineering, UANL, 2010. In Spanish, translation: "Just-in-Time Scheduling: Optimal Solutions by Convex Reformulations."
- Gabriela García (Ph.D.), "*Expansión de Capacidad de Plantas Batch*" Graduate Program in Systems Engineering, UANL, 2010. In Spanish, translation: "Capacity Expansion in Batch Plants".
- Perla E. Cantú (M.Sc.), "*Análisis y Optimización Estructural de Redes Complejas*," Graduate Program in Systems Engineering, UANL, 2009. In Spanish, translation: "Analysis and Structural Optimization of Complex Networks."
- Jonás Velasco (M.Sc.), "*Una Heurística Basada en Búsqueda Estocástica para Problemas de Optimización Global*," Graduate Program in Systems Engineering, UANL, 2009. In Spanish, translation: "A Stochastic Search based Heuristic for Global Optimization Problems."
- Anel B. Reyes (M.Sc.), "*Determinación de Cotas Inferiores basadas en Relajación Lagrangiana para un Problema Bi-objetivo de Diseño de Cadena de Suministro*," Graduate Program in Systems Engineering, UANL, 2008. In Spanish, translation: "Lagrangian-based Lower Bounds for a Biobjective Supply Chain Problem."
- J. F. Augusto Medina (M.Sc.), "*Un Enfoque Robusto a un Problema de Diseño de Red Multiproducto con Incertidumbre en Parámetros de Entrada*," Graduate Program in Systems Engineering, UANL, 2005. In Spanish, translation: "A Robust Optimization Approach to a Multicommodity Network Design Problem with Parameter Uncertainty."
- Karim de Alba (Ph.D.), "*Un Procedimiento Heurístico para un Problema de Diseño de Redes Multiproducto con Capacidad Finita y Cargos Fijos*," Graduate Program in Systems Engineering, UANL, 2004. In Spanish, translation: "A Heuristic Procedure for a Capacitated Fixed-Charge Multicommodity Network Design Problem."
- Ma. Aracelia Alcorta (Ph.D.), "*Tratamiento Integral de Filtrado y Control Óptimo de Procesos No Lineales con Múltiples Retardos Variantes en el Tiempo*," Doctoral Program in Industrial Physics Engineering, FCFM, UANL, 2003. In Spanish, translation: "Filtering and Optimal Control of Nonlinear Processes with Multiple Time Delays."
- Seongbae Kim (Ph.D.), "*Minimum-Cost Fuel Consumption on Natural Gas Transmission Network Problem*," Dept. of Industrial Engineering, Texas A&M U., 1999.
- Suming Wu (Ph.D.), "*Steady-State Simulation and Fuel Cost Minimization of Gas Pipeline Networks*," Dept. of Mathematics, U. of Houston, 1998.

PROJECTS

Grants as a PI

- "*Intelligent Algorithms for Efficient Commercial Zone Design under Multiple Planning Criteria*" (2009 - 2010)
Awarded by UANL, Scientific and Technological Research Support Program, grant no. CE012-09, \$65,000 pesos (\$5,000 USD).
- "*Metaheuristic Optimization Techniques for Efficient Commercial Territory Design*" (2007 - 2008)
Awarded by UANL, Scientific and Technological Research Support Program, grant no. CA1478-07, \$65,000 pesos (\$5,900 USD).
- "*Intelligent Optimization of Commercial Territory Design Problems*" (2007 - 2010)
Awarded by CONACYT, grant no. 48499-Y, \$514,500 pesos (\$46,770 USD).
- "*Optimal Sequencing of Flow Shops with Setup Times*" (2006 - 2007)
Awarded by UANL, Scientific and Technological Research Support Program, grant no. CA1262-06, \$65,000 pesos (\$5,900 USD).
- "*Improving the Quality of Optimization Methods for Flow Shop Scheduling Problems*" (2005 - 2006)
Awarded by UANL, Scientific and Technological Research Support Program, grant no. CA1058-05, \$60,000 pesos (\$5,450 USD).

- *"Intelligent Optimization of Flow Shop Scheduling"* (2004)
Awarded by AMC-FUMEC, Young Investigator Program for Summer Research, \$4,500 USD.
- *"Pipeline Network Optimization: Implementation of Heuristic Techniques"* (2004 - 2005)
Awarded by UANL, Scientific and Technological Research Support Program, grant no. CA820-04, \$60,000 pesos (\$5,200 USD).
- *"Heuristic Methods for Pipeline Network Optimization"* (2002 - 2003)
Awarded by UANL, Scientific and Technological Research Support Program, grant no. CA763-02, \$60,000 pesos (\$6,500 USD).
- *"Evaluating the Quality of Optimization Algorithms for Pipeline Networks"* (2001 - 2002)
Awarded by UANL, Scientific and Technological Research Support Program, grant no. CA555-01, \$60,000 pesos (\$6,315 USD).
- *"Intelligent Optimization of Natural Gas Transmission Networks"* (2000 - 2003)
Awarded by CONACYT, Young Investigator Project Program, grant no. J33187-A, \$1,123,553 pesos (\$118,760 USD).
- *"Efficient Operation of Natural Gas Transmission Networks"* (2000 - 2001)
Awarded by UANL, Scientific and Technological Research Support Program, grant no. CA363-00, \$50,000 pesos (\$5,263 USD).
- *"Efficient Operation of Natural Gas Transmission Networks"* (1999 - 2000)
Awarded by CONACYT, Installation Project Program, grant no. I32827-A, \$70,000 pesos (\$7,368 USD).

Other Awards/Funding

- *"Funding for PISIS-UANL Infrastructure"* (2002)
Co-directors: Dr. Roger Z. Ríos, Dra. Ada Álvarez. Collaborators: Dr. Óscar Chacón, Dr. César Villarreal, Dr. Igor Litvinchev. Awarded by CONACYT under the PIFOP Program, grant C/PFPN-2002-20-12, for a new building for the Graduate Program in Systems Engineering at UANL, \$8'000,000 pesos (800,000 USD).
- *"Funding for PISIS-UANL Computer Lab"* (2002)
Co-directors: Dr. Roger Z. Ríos, Dra. Ada Álvarez. Collaborators: Dr. Óscar Chacón, Dr. César Villarreal, Dr. Igor Litvinchev. Awarded by CONACYT under the PIFOP Program, grant C/PFPN-2002-20-12, for a new high performance computer lab for the Graduate Program in Systems Engineering at UANL, \$1'200,000 pesos (120,000 USD).
- *"Funding for PISIS-UANL Research Collaboration"* (2002)
Co-directors: Dr. Roger Z. Ríos, Dra. Ada Álvarez. Collaborators: Dr. Óscar Chacón, Dr. César Villarreal, Dr. Igor Litvinchev. Awarded by CONACYT under the PIFOP Program, grant C/PFPN-2002-20-12, for supporting research collaboration between faculty from the Graduate Program in Systems Engineering at UANL and other institutions, \$600,000 pesos (60,000 USD).

Participant in Other Projects

- Research Associate in *"Robust Design of Multiobjective Supply Chains with Stochastic Costs and Demands."* PI: Dr. Ada M. Álvarez (UANL). Sponsored by SEP-PAICYT, grant 61903, 2007 - 2010.
- Research Associate in *"Advanced Optimization Techniques for Supply Chains."* PI: Dr. Igor Litvinchev (UANL). Sponsored by SEP-PAICYT, grant 61343, 2007 - 2010.
- Supervising Professor in *"GRASP for Territory Design"*. MSc student: Leticia G. Vargas (UANL). Sponsored by a grant for master studies from CONACYT, 2003 - 2005.
- Research Associate in *"Solution of Bilevel Programming Problems by Penalty Function Techniques."* PI: Dr. Vyacheslav V. Kalashnikov (UANL). Sponsored by UANL-PAICYT, grant CA562-01, 2001 - 2002.
- Co-supervising Professor in *"Optimal Design of Gating Systems"*. PhD student: Carlos E. Esparza (UANL). Partly sponsored by a grant for doctoral studies from CONACYT and Nemak, 2000 - 2003.
- Research Associate in *"Compressor-Driven Network Flows."* PI: Dr. E. Andrew Boyd (Texas A&M U.). Sponsored by the National Science Foundation, grant no. DMI-9622106, 1997 - 99.
- Research Associate in *"Safe and Energy-Efficient Natural Gas Networks."* Co-PIs: Dr. E. Andrew Boyd (Texas A&M U.) and Dr. L. Ridgway Scott (U. of Houston). Sponsored by the Texas Higher Education Coordinating Board, ARP/ATP, grant no. 999903-122, 1997 - 98.

TEACHING

Courses Taught: Undergraduate

- Engineering Economic Analysis (30 hrs./semester, U. of Texas - Austin, 4 times, 1995 - 97)
- Introduction to Operations Research (45 hrs./semester, U. of Texas - Austin, once, 1995)
- Operations Research (48 hrs./semester, UANL-FIME, 4 times, 2004 - 2010)

Courses Taught: Graduate

- Data Structures in C++ (48 hrs./semester, UANL-FIME, twice, 2004 - 2005)
- Dynamic Programming (48 hrs./semester, UANL-FIME, once, 2010)
- Foundations of Integer Programming (48 hrs./semester, UANL-FIME, 3 times, 2009)
- Foundations of Stochastic Processes (48 hrs./semester, UANL-FIME, twice, 2000 - 2001)
- Linear Programming (48 hrs./semester, UANL-FIME, 4 times, 1999 - 2003)
- Metaheuristic Optimization (48 hrs./semester, UANL-FIME, twice, 2007 - 2008)
- Network Flow Programming (48 hrs./semester, UANL-FIME, 4 times, 2002 - 2007)
- Queueing Systems (48 hrs./semester, UANL-FIME, once, 2001)
- Queueing Theory (45 hrs./semester, UANL-FCQ, once, 2000)

PROFESSIONAL SERVICE

Editorships

- Guest Co-editor, *Annals of Operations Research*, Vol. 169, Springer, 2006-2009
- Guest Editor, *Journal of Heuristics*, Vol. 15(2), Springer, 2006-2009
- Guest Co-editor, *Annals of Operations Research*, Vol. 157, Springer, 2004-2007
- Associate Editor, Area: Operations Research, *Journal of Applied Mathematics and Decision Science*, March 2003 - present
- Editorial Board Member, *Ingenierías*, January 2005 - December 2008
- Guest Co-editor, *J. of Applied Mathematics and Decision Science*, Vol. 2006, special issue 1, Hindawi, 2006
- Guest Co-editor, *Annals of Operations Research*, Vol. 138, Springer, 2003-2005
- Guest Co-editor, *Annals of Operations Research*, Vol. 117, Kluwer, 2000-2002
- Guest Co-editor, *Annals of Operations Research*, Vol. 116, Kluwer, 2000-2002
- Co-editor, *Integer Programming and Combinatorial Optimization*, Vol. 1412, Lecture Notes in Computer Science, Springer, 1997-1998

Service to UANL

- Host Professor, 1 undergraduate student supervised during the XII Scientific Summer Program, June-July 2010.
- Reviewer, 2008 UANL Research Award, Exact Sciences category, March 2009
- Host Professor, 1 undergraduate students supervised during the IX Scientific Summer Program, June-July 2007.
- Host Professor, 1 undergraduate students supervised during the VIII Scientific Summer Program, June-July 2006.
- Reviewer, 2003 UANL Research Award, Engineering and Technology category, March 2004
- Project Reviewer, 2004 UANL PAICYT, Applied Sciences Area, January 2004
- Organizing Committee Member, 1st FIME Symposium on Operations Research and Systems, October 2003
- Reviewer, 2002 UANL Research Award, Engineering and Technology category, March 2003
- Collaborator, Symposium on Education, Science, and Technology, FIME, October 2002
- Host Professor, 2 undergraduate students supervised during the IV Scientific Summer Program, July-August 2002.
- Project Reviewer, 2002 UANL PAICYT, Applied Sciences Area, April 2002
- Reviewer, 2001 UANL Research Award, Engineering and Technology category, March 2002
- Host Professor, 1 high school student supervised during the III Scientific Summer Program, July-August 2001.
- Reviewer, 2000 UANL Research Award, Exact Sciences category, March 2001

- **Host Professor**, 2 high school students supervised during the II Scientific Summer Program, July-August 2000.
- **Co-founder** (with Ada Álvarez and Oscar L. Chacón) of Masters Program in Systems Engineering at Facultad de Ingeniería Mecánica y Eléctrica. Approved by H. Consejo Universitario in December 1999.

Service to Mexican Academy of Sciences

- **Host Professor**, 1 undergraduate student supervised during the XX Scientific Summer Program, June-August 2010.
- **Host Professor**, 1 undergraduate student supervised during the XIX Scientific Summer Program, June-August 2009.
- **Host Professor**, 1 undergraduate student supervised during the XVIII Scientific Summer Program, June-August 2008.
- **Host Professor**, 2 undergraduate students supervised during the XVII Scientific Summer Program, June-August 2007.
- **Host Professor**, 2 undergraduate students supervised during the XIV Scientific Summer Program, June-August 2004.
- **Host Professor**, 2 undergraduate students supervised during the XIII Scientific Summer Program, June-August 2003.
- **Host Professor**, 1 undergraduate student supervised during the XII Scientific Summer Program, June-August 2002.
- **Host Professor**, 5 undergraduate students supervised during the XI Scientific Summer Program, June-August 2001.

Conference Organization

- **Minisymposium Coordinator and Organizer**, "Optimization and Operations Research", NAMIAM, Huatulco, December 2010
- **Session Chair**, "Facility Location I", INFORMS National Meeting, Austin, November 2010
- **Session Chair**, "Trajectory-based methods", VII MAEB, Valencia, Spain, September 2010
- **Session Chair**, "OR and Facility Location II", IIE Annual Research Conference, Cancún, Mexico, June 2010
- **Organizing Committee Member**, XIV ELAVIO, El Fuerte, Mexico, August 2009
- **Session Chair**, "Facility territory design", CORS/INFORMS Joint International Meeting, Toronto, Canada, June 2004
- **Session Chair**, "Meta-Heuristics", 12th CLAIO, Havana, Cuba, October 2004
- **Session Chair**, "Energy Modeling", CORS/INFORMS Joint International Meeting, Banff, Canada, May 2004
- **Session Chair**, "Logistics Research and Models", 15th Annual POM Conference, Cancún, Mexico, May 2004
- **Organizing Committee Member**, 1st FIME Symposium on Operations Research and Systems (IO-FIME), UANL, San Nicolás de los Garza, México, October 2003
- **Session Chair**, "Simulation and Modeling", 7th WSEAS International Conference on Systems, Corfu, Greece, July 2003
- **Session Chair**, "Modeling Systems", 11th CLAIO, Concepción, Chile, October 2002
- **Session Chair**, "Optimization and Mathematical Programming", IEEE International Conference on Systems, Man, and Cybernetics, Tucson, EUA, October 2001
- **Session Chair**, "Environment and Natural Resources I", INFORMS National Meeting, San Antonio, November 2000
- **Session Organizer and Chair**, "Branch-and-Cut Algorithms", INFORMS National Meeting, San Antonio, November 2000
- **Session Organizer and Chair**, "Bilevel Programming", 10th CLAIO, México City, September 2000
- **Cluster Co-chair**, "Energy", INFORMS National Meeting, Salt Lake City, May 2000
- **Session Organizer and Chair**, "Applications of Operations Research in the Natural Gas Industry", 7th INFORMS Computing Society Conference, Cancún, México, January 2000
- **Session Chair**, "Nonlinear Programming II", INFORMS National Meeting, Seattle, October 1998
- **Cluster Chair**, "Energy", INFORMS National Meeting, Seattle, October 1998
- **Organizing Committee Member**, 6th International Conference on Integer Programming and Combinatorial Optimization (IPCO), Houston, June 1998

Journal Refereeing

- *Annals of Operations Research*, 2 papers, 2010
- *Interfaces*, 1 paper, 2010
- *Journal of Scheduling*, 1 paper, 2010
- *World Applied Science Journal*, 1 paper, 2009
- *Journal of the Operational Research Society*, 1 paper, 2008 - 2009
- *Energy*, 1 paper, 2005
- *Journal of Applied Mathematics & Decision Sciences*, 3 papers, 2003 - 2005
- *Ingenierías*, 3 papers, 2001 - 2004
- *European Journal of Operational Research*, 5 papers, 2001 - 2006
- *Journal of Computational and Graphical Statistics*, 1 paper, 1999
- *IIE Transactions*, 1 paper, 1999 - 2001
- *Discrete Applied Mathematics*, 1 paper, 1998
- *International Journal of Operations and Quantitative Management*, 1 paper, 1998
- *Computers & Operations Research*, 7 papers, 1997 - 2010
- *Journal of Heuristics*, 2 papers, 1995 - 1999

Other Refereeing Work

- Reviewer, 1 project, 2009 SEP-CONACYT Research Projects CB2009-01, June 2010
- Reviewer, 1 paper, *MAEB 2010*, May 2010
- Reviewer, 3 graduate programs, 2009 CONACYT National Program of High Quality Graduate Programs, Plenary Evaluation, December 2009
- Reviewer, 1 graduate program, 2009 CONACYT National Program of High Quality Graduate Programs, Preevaluation, October 2009
- Reviewer, 2 papers, Workshop on Metaheuristics for Intelligent Logistics Planning, August 2009
- Reviewer, 14 works, 2008 UANL Research Award, Exact Sciences category, March 2009
- Reviewer, 1 application, CONACYT, Fellowships for Abroad Graduate Studies, November 2008
- Reviewer, 29 applications, CONACYT, Fellowships for Abroad Graduate Studies, September 2008
- Referee, 1 paper, Volume: *Metaheuristics in the Service Industry*, May 2008
- Reviewer, 2 programs, 2007 CONACYT National Program of High Quality Graduate Programs, November 2007
- Reviewer, 1 paper, *MAEB 2007*, November 2006
- Reviewer, 4 projects, 2005 CONACYT-SEP Research Projects, January 2006
- Reviewer, 2 papers, handled 9 papers, *MICAI 2005*, June 2005
- Reviewer, 5 papers, handled 6 papers, Mexican International Conference on Computer Science, May 2005
- Reviewer, 2 projects, 2004 CONACYT-SEP Research Projects, March 2005
- Reviewer, 6 papers, Mexican International Conference on Computer Science, April 2004
- Reviewer, 9 works, 2003 UANL Research Award, Engineering and Technology category, March 2004
- Reviewer, 43 projects, 2004 UANL PAICYT, Applied Sciences Area, January 2004
- Reviewer, 5 papers, *MICAI 2004*, November 2003
- Reviewer, 5 candidates, Faculty Ranking, Institutional Research Dept., Facultad Católica de Química e Ingeniería Fray Rogelio Bacon, Rosario, Argentina, June-September 2003
- Reviewer, 14 works, 2002 UANL Research Award, Engineering and Technology category, March 2003
- Reviewer, 1 paper, *XIII SNM Conference*, September 2002
- Referee, 1 paper, *MIC 2001*, May and December 2002
- Reviewer, 41 projects, 2002 UANL PAICYT, Applied Sciences Area, April 2002
- Reviewer, 9 works, 2001 UANL Research Award, Engineering and Technology category, March 2002
- Reviewer, 2 papers, *MICAI 2002*, December 2001
- Reviewer, 1 paper, *XXXII ITESM Conference*, October 2001
- Reviewer, 14 works, 2000 UANL Research Award, Exact Sciences category, March 2001
- Reviewer, 5 papers, *X CLAIO*, June 2000
- Referee, 2 papers, *Proceedings of the 9th Industrial Engineering Research Conference*, December 1999
- Reviewer, 1999 Student TECNOS Award (best BSc thesis), September 1999

- Referee, 1 paper, *Proceedings of the 7th INFORMS Computing Society Conference*, July 1999
- Reviewer, 1 paper, IV *REDM Conference*, August 2009

Mailing List Administration

- Owner, June 2003 - present
SCHED-L, Scheduling research
- Founder and Owner, June 2003 - present
IOMEX-L, Operations research in Mexico
- Founder and Owner, January 2000 - present
PISIS-L, PISIS Faculty and students

Offices Held

- Vice-President, Latin-American Association on Operations Research (ALIO), 2002 -2004
- U. of Texas Chapter President, Omega Rho International Honor Society, 1993 - 97

Memberships: Current

- [Association of European Operational Research Societies](#) (EURO), 2005 - present
- [EURO Chapter on Combinatorial Optimization](#) (ECCO), 2009 - present
- [EURO Chapter on Metaheuristics](#) (EU/ME), 2005 - present
- [EURO Working Group on Locational Analysis](#) (EWGLA), 2008 - present
- [EURO Working Group on OR in Agriculture and Forest Management](#) (ORAFM), 2009 - present
- Institute for Operations Research and Management Sciences (INFORMS), 1995 - present
- INFORMS Computing Society, 1996 - present
- INFORMS Energy, Natural Resources and Environment Section, 2001 - present
- INFORMS Location Analysis Section, 2006 - present
- INFORMS Optimization Section, 2002 - present
- INFORMS Transportation Science and Logistics Section, 2004 - present
- Institute of Industrial Engineers (IIE), 2008 - present
- Mathematical Programming Society, 1994 - present
- Mexican Institute for Operations Research and Systems, 2000 - present
- Omega Rho International Honor Society, 1992 - present
- Pipeline Simulation Interest Group, 1997 - present
- Society for Industrial and Applied Mathematics (SIAM), 1993 - present
- SIAM Activity Group on Optimization, 1993 - present
- Spanish Operations Research Society (SEIO), 2009 - present

Conferences Attended

- I North American Meeting on Industrial and Applied Mathematics, Huatulco, Mexico, 2010
- INFORMS National Meeting, Austin, 2010
- VII Spanish Conference on Metaheuristics, Evolutive and Bioinspired Algorithms, Valencia, Spain, 2010
- International Conference Operations Research "Mastering Complexity", Munich, Germany, 2010
- SIAM Conference on Discrete Mathematics, Austin, 2010
- IIE Annual Conference and Expo, Cancún, Mexico, 2010
- XIV ELAVIO, El Fuerte, Mexico, 2009
- I SMM-RSME Joint Meeting, Oaxaca, Mexico, 2009
- CORS-INFORMS International Meeting, Toronto, Canada, 2009
- IIE Annual Conference and Expo, Miami, USA, 2009
- 6th International Conference on Computational Management Science, Geneve, Switzerland, 2009
- 10th EU/MEeting on Metaheuristics, Porto, Portugal, 2009
- 9th Industrial Engineering Conference, ITC, Culiacan, México, 2009
- 40th Mexican Mathematical Society Conference, Monterrey, México, 2007
- 8th EU/MEeting on Metaheuristics in the Service Industry. Stuttgart, Germany, 2007
- 1st Spanish Meeting on Evolutionary Algorithms and Metaheuristics (JAEM'07). Zaragoza, Spain, 2007
- 39th Mexican Mathematical Society Conference, Villahermosa, Mexico, 2006
- 3rd International Workshop on Freight Transportation and Logistics (Odysseus), Altea, Spain, 2006
- 5th ALIO/EURO Conference on Combinatorial Optimization, ENST, Paris, France, 2005

- 4th Spanish Conference on Metaheuristics, Evolutive and Bioinspired Algorithms, Granada, Spain, 2005
- 2nd International Workshop on Hybrid Metaheuristics, Barcelona, Spain, 2005
- 12th Latin-Iberian-American Conference on Operations Research and Systems, Havana, Cuba, 2004
- International Conference on Cybernetics and Information Technologies, Systems and Applications, Orlando, 2004
- CORS/INFORMS Joint International Meeting, Banff, Canada, 2004
- 15th Annual POM Conference, Cancún, Mexico, 2004
- World-wide Logistics Meeting, Monterrey, México, 2004
- 1st Graduate Research Colloquium, FIME, UANL, San Nicolás de los Garza, México, 2003
- 7th Symposium on Informatics, Facultad de Contaduría y Administración, UAEM, Toluca, México, 2003
- 1st FIME Symposium on Operations Research and Systems, UANL, San Nicolás de los Garza, México, 2003
- 7th WSEAS International Conference on Systems, Corfu, Greece, 2003
- 1st FIME Conference on Engineering Applied Knowledge, UANL, San Nicolás de los Garza, México, 2003
- 13th National School on Optimization and Numerical Analysis, Saltillo, Mexico, 2003
- 11th Latin-Iberian-American Conference on Operations Research, Concepción, Chile, 2002
- 10th International Symposium on Computer Systems, Saltillo, México, 2002
- 12th International Conference on Industrial Engineering, Nuevo Laredo, México, 2002
- IEEE International Conference on Systems, Man, and Cybernetics, Tucson, 2001
- 11th International Conference on Industrial Engineering, Nuevo Laredo, México, 2001
- INFORMS National Meeting, San Antonio, 2000
- 32nd PSIG Meeting, Savannah, 2000
- 10th Latin-American Conference on Operations Research and Systems, México City, 2000
- 7th INFORMS Computing Society Conference, Cancún, México, 2000
- 6th SIAM Conference on Optimization, Atlanta, 1999
- 30th PSIG Meeting, Denver, 1998
- INFORMS National Meeting, Seattle, 1998
- SIAM Annual Meeting, Toronto, Canada, 1998
- 6th International IPCO Conference, Houston, 1998
- INFORMS National Meeting, Montreal, Canada, 1998
- NSF Design & Manufacturing Grantees Conference, Monterrey, México, 1998
- INFORMS National Meeting, Dallas, 1997
- 29th PSIG Meeting, Tucson, 1997
- INFORMS National Meeting, San Diego, 1997
- 7th International Conference on Industrial Engineering, Nuevo Laredo, México, 1997
- 2nd University of Texas Student Research Conference, Austin, 1996
- Stochastic Programming Tutorial, Tucson, 1996
- 1st University of Texas Student Research Conference, Austin, 1995
- INFORMS National Meeting, New Orleans, 1995
- 21st Mexican Mathematical Society Conference, Hermosillo, México, 1988
- 31st Mexican Physics Society Annual Meeting, Monterrey, México, 1988
- 17th Mexican Mathematical Society Conference, Guanajuato, México, 1983

COURSE BACKGROUND

Relevant Coursework

- **Optimization:** Linear programming, network flow programming, integer programming, mixed-integer programming, nonlinear programming, dynamic programming, combinatorial optimization, large-scale system optimization, sequencing and scheduling
- **Probability:** Probability and statistics, simulation, stochastic processes, stochastic programming, mathematical statistics, analysis and design of experiments, quality control, time series analysis
- **Computer Science:** Probabilistic analysis of algorithms, parallel algorithms for matrix computations, data structures in C/C++

Workshops / Seminars

- **Location Analysis Tutorial**, April 2006
20-hr short course, UPC, Barcelona, Spain. Instructor: Gilbert Laporte
- **Workshop: COIN-OR: Software Tools for Optimization**, May 2004
CORS/INFORMS Joint International Meeting, Banff, Canada. Instructors: Ted Ralphs, Matthew Saltzman, J. Fasano, Alan King, Lou Hafer, and Steven Henderson
- **Research at UANL and CONACYT Support Programs**, March 2001
Center for Support and Academic Service, UANL, Monterrey, México.
- **Workshop: OR in the Deregulated Power Industry**, October 1997
Instructor: Robert Entriken. INFORMS National Meeting, Dallas.
- **Natural Gas 101**, July 1997
3-day workshop, Energy Seminars, Inc., Houston.
- **Stochastic Programming Tutorial**, January 1996
2-day tutorial, U. of Arizona, Dept. of Systems and Industrial Engineering, Tucson.
- **Statistical Quality Control**, August 1990
SABA Statistical Consulting, Monterrey, México.

Tutorials

- **Intelligence Operations Research**, November 2010
Instructor: Edward H. Kaplan. INFORMS National Meeting, Austin, USA.
- **New Developments for Solving Real World Optimization Problems by Marrying Simulation and Optimization**, November 2010
Instructor: Manuel Laguna. INFORMS National Meeting, Austin, USA.
- **ORMS and Risk Management Failures: What are We Doing Wrong?**, November 2010
Instructor: John R. Birge. INFORMS National Meeting, Austin, USA.
- **Hybridizations of GRASP with path-relinking**, September 2010
Instructor: Mauricio Resende. 7th MAEB, Valencia, Spain.
- **Assessing solution quality in stochastic programs**, June 2009
Instructor: Dave Morton. CORS/INFORMS Joint International Meeting, Toronto, Canada.
- **Fifty years of vehicle routing**, June 2009
Speaker: Gilbert Laporte. CORS/INFORMS Joint International Meeting, Toronto, Canada.
- **Three combinatorial problems in computational and genomic biology**, June 2009
Speaker: Richard M. Karp. CORS/INFORMS Joint International Meeting, Toronto, Canada.
- **You can't get there from here - reflections on an unlikely career in OR**, June 2009
Speaker: Steve Gallivan. CORS/INFORMS Joint International Meeting, Toronto, Canada.
- **Stochastic programming: From data to optimal decisions**, May 2009
Instructor: Werner Römis. 6th International Conference on Computational Management Science. Geneva, Switzerland.
- **Applications of metaheuristics to optimization problems in sports**, April 2009
Instructor: Celso Ribeiro. 10th EU/MEeting on Metaheuristics. Porto, Portugal.
- **Applications of meta-heuristics to traffic engineering in IP networks**, April 2009
Instructor: Bernard Fortz. 10th EU/MEeting on Metaheuristics. Porto, Portugal.
- **Challenging industrial optimization problems**, April 2009
Instructor: Mikael Ronnqvist. 10th EU/MEeting on Metaheuristics. Porto, Portugal.
- **Electronic design: A new field of investigation for large scale optimization**, April 2009
Instructor: Marc Sevaux. 10th EU/MEeting on Metaheuristics. Porto, Portugal.
- **SLS Algorithms Engineering**, April 2009
Instructor: Thomas Stützle. 10th EU/MEeting on Metaheuristics. Porto, Portugal.
- **Hybridizing Metaheuristics: The road to success in problem solving!?!**, October 2007
Instructor: Stefan Voß. 8th EU/MEeting on Metaheuristics in the Service Industry. Stuttgart, Germany.
- **Metaheuristics in interactive multiple objective optimization**, October 2007
Instructor: Andrzej Jaskiewicz. 8th EU/MEeting on Metaheuristics in the Service Industry. Stuttgart, Germany.
- **Advances in Modeling and Solving Mathematical Programming Problems**, October 2005
Instructor: Soffian Oussedik. 5th ALIO/EURO Conference on Combinatorial Optimization, Paris, France.
- **Memetic Algorithms**, September 2005

- Instructor: Carlos Cotta. IV MAEB'05, Granada, Spain.
- **OR Challenges in Forestry Resource Problems**, October 2004
Instructor: Andrés Weintraub. CLAIO XII, Havana, Cuba.
- **Level Packing in Two Dimensions**, October 2004
Instructor: Silvano Martello. CLAIO XII, Havana, Cuba.
- **Creating Competitive Advantage Using Operations Research**, May 2004
Instructor: Thomas M. Cook. CORS/INFORMS Joint International Meeting, Banff, Canada.
- **The New World of International Trade**, May 2004
Instructor: Ralph E. Gomory. CORS/INFORMS Joint International Meeting, Banff, Canada.
- **Stochastic Programming**, May 2004
Instructor: François V. Louveaux. CORS/INFORMS Joint International Meeting, Banff, Canada.
- **Operational Research in Telecommunications**, May 2004
Instructor: Brigitte Jaumard. CORS/INFORMS Joint International Meeting, Banff, Canada.
- **Online Optimization**, May 2004
Instructor: Patrick Jaillet. CORS/INFORMS Joint International Meeting, Banff, Canada.
- **Optimization through Collaborative Transportation**, February 2004
Instructor: Garland Chow. World Logistics Meeting, Monterrey, México.
- **Scatter Search: Methodology and Applications**, May 2003
Instructor: Manuel Laguna. PISIS, UANL, México.
- **Staff Scheduling at USPS Mail Processing & Distribution Centers**, March 2003
4-hr short-course. Instructor: Jonathan F. Bard. PISIS, UANL, México.
- **Operational Research Approaches to Genome Mapping**, October 2002
Instructor: Jacek Blazewicz. CLAIO XI, Concepción, Chile.
- **Transportation, Planning, Models, Achievements, and Challenges**, October 2002
Instructor: Michael Florian. CLAIO XI, Concepción, Chile.
- **Scatter Search: Methodology and Applications**, October 2002
Instructor: Manuel Laguna. CLAIO XI, Concepción, Chile.
- **Simulation-Based Optimization**, October 2002
Instructor: Averill M. Law. CLAIO XI, Concepción, Chile.
- **Models and Algorithms for the Train Timetabling Problem**, October 2002
Instructor: Paolo Toth. CLAIO XI, Concepción, Chile.
- **Column Generation in Integer Linear Programming and Applications**, October 2002
Instructor: Nelson Maculan. CLAIO XI, Concepción, Chile.
- **Reusable Software Components for Heuristic Search: HotFrame**, January 2000
Instructors: David L. Woodruff and Stefan Voss. 7th INFORMS Computing Society Conference, Cancún, México.
- **Computational Global Optimization: Algorithms and Applications**, January 2000
Instructor: Janos D. Pinter. 7th INFORMS Computing Society Conference, Cancún, México.
- **An Industrial Perspective on Optimization**, May 1999
Instructor: John T. Betts. 6th SIAM Conference on Optimization, Atlanta.
- **Advances in Formulation and Solution of Difficult Combinatorial Optimization Problems**, May 1999
Instructor: Karla L. Hoffman. 6th SIAM Conference on Optimization, Atlanta.
- **Approximation Algorithms via Linear Programming**, October 1998
Instructor: David Shmoys. INFORMS National Meeting, Seattle.
- **An Introduction to Tabu Search**, April 1998
Instructor: Michel Gendreau. INFORMS National Meeting, Montreal.
- **Branch and Cut and Price**, April 1998
Instructor: George L. Nemhauser. INFORMS National Meeting, Montreal.
- **Lift and Project Methods for Mixed-Integer Programming**, April 1998
Instructor: Sebastián Ceria. INFORMS National Meeting, Montreal.
- **Column Generation Methods**, April 1998
Instructor: Jacques Desrosiers. INFORMS National Meeting, Montreal.
- **Large Scale Problem Reformulation**, October 1997
Instructor: Hanif Sherali. INFORMS National Meeting, Dallas.
- **Heuristics for Hard Scheduling Problems**, October 1997
Instructor: Jan K. Lenstra. INFORMS National Meeting, Dallas.
- **Computational Issues in Combinatorial Optimization**, October 1997

- Instructor: Bill Cook. INFORMS National Meeting, Dallas.
- **Lagrangean Relaxation, Extensions & Applications**, October 1997
Instructor: Monique Guegnard. INFORMS National Meeting, Dallas.
- **Global Optimization**, May 1997
Instructor: Cris Floudas. INFORMS National Meeting, San Diego.
- **Machine Scheduling**, October 1995
Instructor: Michael Pinedo. INFORMS National Meeting, New Orleans.
- **Tabu Search**, October 1995
Instructors: Fred Glover and Manuel Laguna. INFORMS National Meeting, New Orleans.

COMPUTER SKILLS

Programming Languages: C++, C, FORTRAN, BASIC.

Mainframes: UNIX (and compatible), VAX/VMS, IBM/VM operating systems.

Microcomputers: PC (Linux, MS-Windows, MS-DOS), Macintosh.

Optimization Software: CPLEX, OSL, GRG2, GAMS, MINTO, MATLAB.

Miscellaneous: System administration of IBM RS/6000 and Sun workstations, mailing list administration, world-wide web page design and development.

PERSONAL INFORMATION

DOB: April 1966
Birthplace: Monterrey, México
Marital status: Married (to Ofelia Rodríguez, August 1992)
Children: A girl (Aleida Shaní, born February 1999) and two boys (Biali Joan, born January 2007, and Vandari Pavel, born March 1996)
Languages: Spanish (native) and English (100%)

REFERENCES

Prof. Jonathan F. Bard (UT-Austin, jbard@mail.utexas.edu)
Dr. Andrew Boyd (PROS Revenue Management, aboyd@prosrn.com)
Prof. Elena Fernández (UPC, e.fernandez@upc.es)
Prof. Patrick Jaillet (MIT, jaillet@mit.edu)
Prof. Manuel Laguna (U. of Colorado, manuel.laguna@colorado.edu)
Prof. Leon S. Lasdon (UT-Austin, lasdon@mail.utexas.edu)
Prof. David Morton (UT-Austin, morton@mail.utexas.edu)
Prof. Ridgway Scott (U. of Chicago, ridg@cs.uchicago.edu)
Prof. Gang Yu (UT-Austin, yu@uts.cc.utexas.edu)

NOTATION

UANL: Universidad Autónoma de Nuevo León
CONACYT: Consejo Nacional de Ciencia y Tecnología (Mexican National Council for Science and Technology)