

---

## CURRICULUM VITAE

### **Sandra Isabel ROBLES**

*Professor - Specialty: Mechanical Design  
Universidad Nacional del Sur, Engineering Department, Argentine.*

*Office: Av. Alem 1253 – Bahía Blanca – Engineering Department – Universidad Nacional del Sur.  
Phone: (54) (291) 459 5100 Ext: 3921  
E-mail: srobles@uns.edu.ar*

### **EDUCATION**

**1999** *Universidad Politécnica de Catalunya - School of school roads, channels and ports, Spain. Master in Numerical Methods Applied to Engineering - (Interdisciplinary Degree).*

**1989** *Universidad Nacional el Sur, Argentine, Chemical Engineer.*

**Since 2011** *Universidad Nacional el Sur, Argentine. Graduate Student to obtain the Academic degree Doctor in Engineering. Thesis subject: Generation of resistant forms and damage detection considering the mechanical behavior*

### **TEACHING EXPERIENCE:**

*Universidad Nacional del Sur, Engineering Department*

*2010- Present Associate Professor  
2003-2010 Adjunct Professor  
1991 - 2003 Graduate Teaching Assistant*

Courses Taught

#### Undergraduate Courses

*Machine Elements (course for the career Mechanical Engineering)  
Mechanism and Machine Elements (course for the career Industrial Engineering)  
Machine elements IE (course for the career Electrical Engineering)*

#### Graduate Courses/Seminars (Doctoral and Master program)

*Pathology and Structural Damage Detection  
Experimental Methods - Applications in Engineering*

### **RESEARCH EXPERIENCE**

#### Research Projects

**2005-2014** *Characterization Mechanical Behavior - Research on Determinants Effects. Director: Dr. Ing. N. F. Ortega. Supported and approved by the General Secretary of Science and Technology, Universidad Nacional del Sur, Argentina. Member of the research group*

**2009-2012** *Creep in Steels: Experimental and Theoretical Study. Director: Dra. Lilian Moro, Co-director: Mg. Sandra Robles. Supported and approved by the General Secretary of Science and Technology, Universidad Nacional del Sur, Argentina.*

**2013-2016** *Creep in steels: Experimental and Theoretical Study. Director: Mg. Sandra Robles, Co-director: Dra. Lilian Moro. Supported and approved by the General Secretary of Science and Technology, Universidad Nacional del Sur, Argentina.*

#### Principial Research and Teaching Fields

*Structural Design; Machine Design; Structural Optimization; Mechanics of materials; Numerical simulation.*

---

## Category in the Incentive Program for Teachers – Researchers

2010 Category III

2005 Category IV

2000 Category V

## Publications

### Book Chapters

Ortega N.F., Robles S.I.; Chapter: Design and Optimization of Large Structure Telescopes, Applied Engineering Modelling, Volume 2, Editors: Walter Legnani, Paul Jacovkis and Ricardo Armentano, National Technological University, ISBN 978-950-42-0082-6, 293-319, 2007

### Books

Ortega NF, Robles SI, Large Telescopes Design and Technology Evolution, Spanish Academic Publisher, 2012.

### Articles Published in Journals

Robles, S.I, Ortega, N.F, "Study of Volumetric Displacement of Shells " Bulletin of the IASS, 8pp. Madrid. Vol. 42, N° 137, pp.139-147, 2001.

Ortega, N.F., Robles, S.I., "The Design of Hyperbolic Paraboloids on the Basis of their Mechanical Behaviour " Thin Walled Structures, Elsevier, Vol. 41, Issue 8, pp. 769 – 784. 2003.

Ortega, N.F., Robles, S.I., " Form finding of revolution shells by analysing mechanical behaviour by means of finite elements method" Journal of Strain Analysis, Vol 40, Issue 8, pp. 775-784. 2005.

Robles, S.I., Ortega N.F., The Structural Mechanics to Service Study Celestial Mechanics Neomenia Journal, 12. 36-39, Madrid, 2005.

Dominguez P., Robles S.I., Ortega N.F., Santos R.; "Stress Concentration Factors in Composite Materials", JEC Composites Magazine, N° 37, 63-65, 2007.

Robles S.I., Ortega N.F.; "Damage Detection in 2D Structures Through Static Response", The Open Construction & Building Technology Journal, Bentham Publishers, ISSN 1874-8368, 26 pp. 2008

Robles S.I., Ortega N.F.; "Optimization of a Telescope Movable Support Structure by Means of Volumetric Displacements", Structural Engineering and Mechanics, Techno Press, ISSN: 1225-4568, 31, 4, 29-42, 2009.

Robles S.I., Ortega N.F.; "Damage evaluation in shells from changes in its static parameters", The Open Construction & Building Technology Journal, Bentham Publishers, ISSN 1874-8368, Vol. 5, 182-189, 2011.

Gonnet A., Robles SI., Moro L., Performance study of a PEM fuel cell. International Journal of Hydrogen Energy. Amsterdam: Pergamon-Elsevier Science LTD. Vol.37, 19, 14757 – 14760, 2012

Gonnet A., Robles SI., Moro L., Study and Experimental Results of Efficiency in Energy Production. Technology and Science. Buenos Aires: Editorial of the National Technological University. vol.10, 20, 40-44. ISSN 1666-6917, 2012.

### Articles in Conference Proceedings

Robles SI, Ortega NF, Design Optimization of Structural Shells by Volumetric deflections. Proceed. ENIEF 2000, Argentina.

Ortega NF, Robles SI, Minimizing Cracking in Fluids Containers Using Numerical Techniques. Proceed. ENIEF 2001, Argentina.

Ortega NF; Robles SI, "Optimization of a mobile bar structure by Volumetric Displacement. Computational Mechanics, Vol XXII, ISSN 1666-6070. Proceed. ENIEF 2003, Argentina.

Robles SI, Ortega NF. Damage Detection in Linear Structural Elements ", Proceed. MECOM 2005, Buenos Aires, Argentine

Ortega NF, Robles SI; Numerical Model to Predict the Residual Life of Concrete Beams with Rebar Corrosion; Proceed. 16th Technical Meeting of the Argentina Association of Concrete Technology, Mendoza, November 2006.

Orbanich CJ, Ortega NF, Robles SI; Damage Detection on Elastic Foundation Beams, Proceed. ENIEF 2006, Santa Fe, November 2006.

Santos RD, Dominguez P, Robles SI, Ortega, NF; Stresses Concentration in Composite Materials elements; Proceed. ENIEF 2006, Santa Fe, November 2006.

- 
- Robles SI, Ortega, NF; *Detection and Quantification of Damage in Laminar Structures; Proceed. ENIEF 2006, Santa Fe, November 2006.*
- M. Rosa, JM Maurizi, SI Robles; *General Frequency Equation Inclined Bar with Uniforms Sections, Proceed. XXXII South American Conference on Structural Engenheria, Campinas - SP - Brazil, May 2006.*
- Orbanich CJ, Robles SI, Ortega NF, *Damage Detection, Localization and quantification in beams Concrete Foundation", Proceed. IX Latin American Congress of Pathology and XI Congress of Quality Control in Construction, Quito, September 2007.*
- Ripani M., Robles SI, Ortega. NF, *Evolution of the adhesion of corroded steel bars in concrete. Proceed. ENIEF 2008, San Luis, Argentine, November 2008.*
- Ripani M., Robles SI, NF Ortega, *Influence of concrete cover thickness on adhesion of corroded steel bars. Proceed. III International Congress of the Argentina Association of Concrete Technology - 17th Technical Meeting. Cordoba, Argentina. October 2008.*
- Daniela Alessio Robles Sandra, Lilian Moro, "Creep in steel - Numerical and Experimental Analysis" *Proceed. AFA, 93 th National Meeting of Physics - XI Meeting of the Uruguayan Society of Physics. Faculty of Natural Sciences, University of Buenos Aires, September 2008.*
- Orbanich C. J., Robles S.I., N. F. Ortega *Failure Detection of Elastic Foundation Plates. Proceed. ENIEF 2009, Tandil, in November 2009.*
- González R.G., Alessio D., Robles SI., Moro L. *Creep resistance of ferritic steels under hydrogen attack Proceed. IAS 2010 2nd International Conference on Interstitially Alloyed Steels – Antwerpen, Bélgica, (2010).*
- Daniela Alessio, Moro Lilian, Sandra Robles. *Creep mechanisms. Theoretical and experimental study. Proceed. 1st Meeting Materials Technology in Argentina. San Nicolas (2010).*
- Adrian Gonnett, Lilián Moro, Sandra Robles, *Study of the influence of the material for the manufacture of electrodes in the operation of a hydrogen cell. Proceed. 1st Meeting Materials Technology in Argentine. San Nicolas (2010).*
- Daniela Alessio Robles Sandra, Lilian Iurman Lucio and Moro. "Influence of stress and temperature in steels subjected to torsional creep" *Second Argentine Congress of Mechanical Engineering, IICAIM 2010, San Juan, November 2010.*
- Gonnet A., Robles SI., Moro L., *Study and Experimental Results of Efficiency in Energy Production. Study and experimental results of efficiency in energy production with a PEM fuel cell. Congreso HYFUSEN 2011. Universidad Nacional de Mar del Plata Argentina*
- Ortega NF, Robles SI, "Discrete Optimization of Bars Structures Using Simulated Annealing, MECOM 2012, November 2012, Salta, 14 pp.
- Alessio D, Robles SI, Iurman L, Moro L. *Changes of the Creep Properties in HP Steel Series Third Argentine Congress of Mechanical Engineering, IICAIM 2012, Buenos Aires, October 2012.*
- Robles SI and Ortega NF. *Design of stress concentrators in Mechanical Elements Through Surface Tensions and Displacements. Proceed. ENIEF 2013, Mendoza, Argentine, november 2013.*

#### Articles in Conference Proceedings concerning Educational Innovation

- Garofoli Aldo and Sandra Robles, *Second Conference on Educational Innovation, August 2000, UNS. Certifications Works; New Method of Evaluation.*
- Garofoli Aldo and Sandra Robles, *III Argentine Congress on Engineering Education, Bahia Blanca, Argentine, September 2000. Integrating theory and practice through a tendering work*
- Ortega NF, Garofoli AD, Robles S.I. *Third Conference on Educational Innovation in the University Classroom, Department of Humanities, UNS, Creativity: A Tool for Revitalizing the Training of Engineers, Argentine, June 2004.*
- Garofoli AD, Robles SI, Alessio D., "Teaching Model in Engineering. Results of an experience. *Proceed. First Argentine Congress of Mechanical Engineering, ICAIM 2008, Bahía Blanca, Argentine, October 2008.*

#### Refereeing

- Reviewer - IV Argentine Congress of Students of Industrial Engineering, CAEII 2006, Bahía Blanca, Argentina, August 2006.*
- Member of the Scientific Committee. First Argentine Congress of Mechanical Engineering I CAIM 2008, Bahía Blanca, October, 2008.*
- Member of the Scientific Committee. Second Argentine Congress of Mechanical Engineering II CAIM 2010, San Juan, november 2010.*
- Member of the Scientific Committee. Third Argentine Congress of Mechanical Engineering III CAIM 2012, Buenos Aires, october 2012.*

---

Member of the Scientific Committee. Fourth Argentine Congress of Mechanical Engineering IV CAIM 2014, Resistencia, September 2014.

## **DISSERTATIONS/STUDENTS SUPERVISED**

### **Master Theses**

**Adrián Gonnet.** Master in Engineering. Study of the effect of electrode material on the operation of a hydrogen fuel cell. Directors: Dra. Lilian Moro – Mg. Ing. Sandra Robles. Finish August 2012; Qualification 10

**Daniela Alessio.** Master in Engineering. Creep mechanisms. Theoretical and experimental study. Director: Dra. Lilian Moro; Assistant Director Mg. Ing. Sandra Robles. In Progress

### **Scholarship Holders**

**Mariela Ripani.** Research Initiation (CSU Resolution 64/07) Awarding Institution: General Secretariat of Science and Technology, UNS Topic Computational Modeling of Corrosion Process in Reinforced Concrete Structures Responsibility Director (together with Dr. Nestor Ortega) Period: April to December 2007.

### **Supervision of undergraduate students**

2005 – Present More than twenty thesis and internships supervised

## **TECHNICAL REPORTS**

2008 Project Rosario II, Enlargement Cargill Malting S.A.C.I. Punta Alvear, Rosario, Argentina, to comply with Res ex - ME 256/00 - updated text - article 5 inc. C. Contract amount between Cargill and FUNS: \$ 14000

2007 Certification of equipment for mining use. Company Salinas La Aurora. Contract amount between La Aurora and FUNS: \$ 3500

2005 Study of a bolted flange of a discharge pipe of cereal and design proposal - PRIMA SA Metal Industry Company, Don Bosco 3045 - Bahia Blanca. Contract amount between PRIMA and FUNS: \$ 1636

## **UNIVERSITY SERVICE**

Universidad Nacional del Sur

2013 - Present Vice Dean of Faculty, Engineering Department

2009 - 2013 Academic Secretary, Engineering Department

2012- Present Member of the Academic committee of the Mechanical Engineering career

2009 - Present Member of Ad Hoc Selection Committee for student mobility programs ARFITEC, JIMA, MACA,

2002-2004 Member of the High Council, UNS.

## **MEMBERSHIPS IN PROFESSIONAL AND HONORARY SOCIETIES**

2001 - Present Member - Argentine Association Teaching Forum of Mechanical Engineering Area - FoDAMI.

2009 - Present Member- Argentine Association of Computational Mechanics - AMCA.

2009 - 2013 Chair - Argentine Association Teaching Forum of Mechanical Engineering Area - FoDAMI

2014 - 2017 Management Committee - Argentine Association Teaching Forum of Mechanical Engineering Area - FoDAMI

---

Ms. Ing. Sandra I. Robles