

## SCIENTIFIC AND EDUCATION CURRICULUM Adriana Gnudi

**Place and date of birth:** Rome, 19/10/1952

**Location of birth:** Via Fermi 16, 20040 Lomagna (Lecco)

### Professional qualifications

- Degree in Mathematics at the University of Genoa on 11/12/74 with vote 105/110 and thesis entitled "A method for automatic tracking of contours."
- Scholarship C.N.R. at the Laboratory for Applied Mathematics Hall under the direction of prof. M.Ancona in the period 15/5/75-10/9/77.
- Enabling the teaching of Mathematics awarded on 11.03.76 with 100/100 and Physics taken on 3/13/76 by a vote 97/100.

### Academic positions

- Current position: Full Professor Mathematical Methods for Economics and Actuarial and Financial Sciences (SECS - S/06) at the Department of Management, Economics and Quantitative Methods, University of Bergamo.
- Previous positions
  - Researcher at the Faculty of Political Science of the University of Milan from 15.07.92, confirmed by 7/15/95, then at the Faculty of Statistics, University of Milan Bicocca in the a.a. '98-'99 and at the Faculty of Economics of the University of Bergamo from a.a. '99-'00.
  - Associate Professor at the Faculty of Economics of the University of Bergamo from a.a '01-'02.
- Since 2006 the director of Matnet, Centre for the Education of Mathematics and its application of the Department of Mathematics, Statistics, Computer Science and Applications, University of Bergamo.
- From 2000 to 2007, responsible for the guidance for the Faculty of Economics, University of Bergamo.
- Since 2003, responsible for the activities of e-learning as a representative of the Faculty of Economics in the Scientific Committee of the Centre for Educational Technology and Communication, University of Bergamo.
- Since 2002, responsible ECDL Test Center.
- Responsible for testing CRUI-AICA IT4PS for the Faculty of Economics, University of Bergamo.

### Academic activities

- In 2006, he set up at the Department of Mathematics, Statistics, Computer Science and Applications Center Matnet (Centre for the teaching of mathematics and its applications) of which to date is the director. As part of the activities of the center was a founder and organizer of initiatives aimed at training courses for teachers of mathematics and the promotion of culture in mathematics at the primary and secondary school students in the province, triggering a number of projects with both the provincial Education Institute is with the Institute of Regional School.
- Since 2010 Head of the local unit of Bergamo for the National Scientific Degrees.
- Responsible for research projects MURST 60%: "Paths multimedia for learning quantitative disciplines" (2000), "Tools and methods for assisted learning in e-learning" (2001), "Using computer tools for e-learning in higher education" (2002); "Methods and techniques for the use of e-learning in distance education and verification of efficacy" (2003.2004); "Studies and testing of tools and methodologies for e-learning in synchronous and asynchronous modes" (2005); "Variational Inequalities and applications in the electricity market" (2006, 2007, 2009). "Methodologies and tools for the teaching of mathematics in e-learning environment" (2008). "Development of methods and models of dynamic equilibrium for the analysis of energy markets" (2010). "Dynamic models and their applications in economics" (2011-2017).
- Scientific Director of IFTS courses of the Lombardy Region: "Technical expert in the use of software packages and tools for the development of the New Economy" (2001 - '02) "Expert in planning and management control" (2003) "Higher level technician for the financial administration" (2003 - '04) "Technical greater commercial marketing sales organization" (2005 - '06)

### Member of the organizing committee of conferences and schools:

- INTAS Summer School, "Nonlinear analysis with applications in Economics, Energy and Transportation", Bergamo, 5-9 June, 2006.
- Summer School "Meet the mathematics, physics and statistics", San Pellegrino Terme (BG), September 2006, 2007, 2008, 2009, 2011, 2013, 2014, 2015.
- Courses for teachers of primary and secondary schools in collaboration with USR Lombardia and U.S.P. Bergamo.

## Teaching Activities

The educational activities took place as part of the graduate course at the Faculty of Economics of the University of Bergamo. In the development of this activity has designed and tested innovative teaching methods with the use of multimedia tools for teaching and online (e-learning). Member of the board of the p.h.d. School of Economics, Applied Mathematics and Operational Research, at the University of Bergamo. In particular: Professor of the p.h.d. courses in Economics and industrial organization first and then in Economics, Applied Mathematics and Operational Research, Faculty of Economics, University of Bergamo.

a.a. 2013/14 - 2016/17 - professor responsible for the course of Elements of Mathematics (9 cfu) of Management, Economics and Quantitative Methods of the University of Bergamo.

a.a. 2000/01 - 2016 / '17 - professor responsible for the course of Computer Science (6 credits) of the Faculty of Economics of the University of Bergamo.

a.a. 2009 / '10 - 2011 / '12 - professor responsible for the course of Complements of Mathematics (6 credits) of the Faculty of Economics of the University of Bergamo.

a.a. 2009 / '10 - 2011 / '12 - professor responsible for the course of Dynamic Optimization (3 credits) degree in the Faculty of Economics of the University of Bergamo.

a.a. 2002 / -2009 '03 / '10 - professor responsible for the course Advanced Mathematical Methods for Economics and Finance (9 cfu) of the Faculty of Economics of the University of Bergamo.

a.a. 2000/01 - 2004/05 - professor responsible for the course Mathematics for Economics (6 credits) of the Faculty of Economics of the University of Bergamo.

a.a. '99 / '00 Professor holder of custody of the course of Automatic Data Processing Economic and Financial Economics Faculty of the University of Bergamo.

a.a. '98 / '99 And '99 / '00 Professor holder of custody of the course Mathematics for Social Sciences of the Faculty of Sociology of the University of Milan Bicocca.

a.a. '97 / '98 Professor holder of custody of the course Financial Mathematics of the Faculty of Political Science of the University of Milan.

a.a. '96 / '97 Professor holds custody of Mathematics Course Management Data Base of the Economic Faculty of Political Science of the University of Milan. by

a.a. '92 / '93 To a.a. '99 / '00, As a researcher has also worked as a teaching assistant for courses in General Mathematics, Faculty of Economics, University of Milan, Mathematics for Social Sciences and Mathematical Finance at the Faculty of Political Sciences Milan, Financial Mathematics at the Faculty of Economics, University of Bergamo.

a.s. from '78-'79 to '91-'92 teacher at Technical Institute "A.Einstein" Vimercate.

a.a. '99 / '00 Teaches a series of seminars entitled "Variational Inequalities and Their Applications" course for PhD in Computational Methods for forecasting and economic and financial decisions at the Faculty of Economics of the University of Bergamo.

a.a. '90 / '91 Professor of a specialized seminar entitled: "Applications of Tencore the teaching of mathematics" in the official teaching of General Mathematics, University of Bergamo.

a.a. '89 / '90 Professor of a dedicated workshop entitled "Optimization techniques and applications" for the course PhD in Statistics at the Faculty of Political Science of the University of Milan.

a.a. '89 / '90 Professor of specialized seminar "Systems copyright for the design of educational activities programmed" in the official teaching of Computers and systems mechanographic University Institute of Bergamo.

a.a. '85 / '86 - '86 / '87 Professor for the integrated course "Issues relating to the introduction and development of supercomputers," in the official teaching of Computers and systems mechanographic University Institute of Bergamo .

a.a. '78 / '79 - '84 / '85 Assistant Officer exercises for the course in General Mathematics at the Institute of Mathematics and Statistics and the course of Automatic Data Processing at the Computing Center of the Institute of Bergamo.

## Research

Since the beginning of her activity Prof.A.Gnudi has dealt with the following topics: - Techniques for tracking contours - Parallel computing and its use in optimization - Financial Applications - Models of equilibrium and variational inequalities. Theoretical and algorithmic aspects - Dynamic models in economics - Use of e-learning in university education. Methodologies and tools asynchronous and synchronous.

Associated with A.M.A.S.E.S., UMI and a member of: Working Group on Generalized Convexity, The Continuous Optimization Working Group (EUROPT), Gruppo nazionale per il Calcolo Scientifico (GNCS)EDEN (European distance education network).

In the research carried out the following activities.

- Fellowship Department at IBM Kingston 48B (USA), Director E.Clementi in the period 01.15.86 - 07.30.86 for research on applications of parallel computation.

- Participation in national and international conferences in which she has held communications and/or chairman:  
since 1995 Annual meetings A.M.A.S.E.S.  
July 8-10, 2015, 13thEUROPT Workshop on Advances in Continuous Optimization, Edinburgh.  
July 10 to 12, 2014, EUROPT 2014 - Perpignan (France)  
July 1 to 4, 2012, EURO INFORM, XXVI European Conference on Operational Research, Rome.  
September 21 to 23, 2012, IGI Conference, Warsaw.  
July 8 to 11, 2012, EURO XXV European Conference on Operational Research, Vilnius.  
GCM10 Symposium, Cluj, Romania, 2010. July 11 to 14, 2010, EURO XXIV European Conference on Operational Research, Lisbon. IFAC CAO'09, Jyväskylä (Finland), 2009.  
July 5 to 8, 2009, EURO XXIII, European Conference on Operational Research, Bonn.  
January 21 to 24, 2008, FIMA Second International Conference "Energy and Environment: new challenges to mathematical modeling and applications, Champoluc.  
July 21 to 25, 2008, GCM IX, Kaohsiung (Taiwan). June 30 to July 4, 2008, WCCM VIII - ECCOMAS, Venice.  
June 11 to 14, 2008, EDEN Annual Conference, Lisbon.  
April 20 to 21, 2007, CMS (Computational Management Science), Imperial College London.  
May 10 to 12, 2007, Didamatica 2007, Cesena.  
July 8 to 11, 2007, EURO XXII, European Conference on Operational Research, Prague.  
October 28 to 30 2007, LINC 2007 Conference, Technology-Enabled Education: A Catalyst for Positive Change-  
Amman, Jordan.  
June 30 to July 1 2007, EURO XXII - European Conference on Operational Research, Prague.  
June 13 to 16 2007, EDEN 2007 Annual Conference, Naples.  
May 10-12 2007, Didamatica 2007, Cesena.  
June 30 to July 1, 2006, Workshop on Advances in Continuous Optimization, Reykjavik, Iceland.  
July 2 to 5, 2006, EURO XXI - European Conference on Operational Research, Reykjavik, Iceland.  
June 14 to 17 2006 Eden 2006 Annual Conference, University of Technology, Vienna.  
6 to 8 October 2005 Conference e-Learning Expo, Ferrara.  
May 12 to 14 2005, Didamatica 2005 Potenza.  
June 20 to July 1 2004 Erice - Workshop "Variational analysis and applications" of International School of Mathematics "G.Stampacchia."  
May 10 to 12 2004, Didamatica 2004, Ferrara.  
June 20 to July 1 2003 Erice - Workshop "Variational analysis and applications" of International School of Mathematics "G.Stampacchia."  
June 16 to 19 2002, Granada - Conference "Open and distance learning in Europe and beyond rethinking Internatinal Co-operation".  
June 13-14 2002, Varese - Workshop "Optimization".  
March 21 to 23 2002, University of Hildesheim - The second research workshop of Eden.  
July 9-17 2001, Erice - Workshop "Optimization and control with applications" of International School of Mathematics "G.Stampacchia."  
June 14 to 15 2001 Verona - Workshop "Optimizing applications in economics, finance and industry."  
June 1 to 4 2001, Tainan-Taiwan - "International conference on optimization and optimal control."  
July 19/27 2000, Catania - WCNA 2000: The 3rd World Congress of Nonlinear Analysts. "  
May 16 2000, Milan - Meeting of Study: Developments scalar and vector optimization.  
May 27/28 1999 Brescia - Mathematics in the Economy - Perspectives and Innovations, Faculty of Economics, University of Brescia.  
June 1/3 1995 Italy - Euro working group on financial modeling - XVII Meeting  
September 5/6 1994, Modena - XVIII Annual Conference AMASES  
November 25/27 1993, Mantova - Euro Working Group on Financial Modelling - XIV Meeting.

### **Quality and relevance of publications:**

1 paper in JOTA(IF2014: 1.509, 5YIF:1.625), 2 papers in EJOR (IF2014: 2.358, 5YIF:2.911), 2 papers in JOGO (IF2014: 1.287, 5YIF:1.445), 1 paper in Opt. Lett. (IF2014: 0.934, 5YIF:1.074), 1 paper in IMA J. Man. Math (IF2014: 0.5, 5YIF:0.592), 1 paper in Opt. and Eng. (IF2014:1.233, 5YIF:1.236), 2 paper MMOR (IF2014:0.625, 5YIF:0.889).

## Research topics and related publications in recent years.

- Finance applications
  1. Abaffy J., Bertocchi M., Gnudi A., Extensions of the Ho and Lee Interest Rate Model to the Multinomial Case, *European Journal of Operational Research*, 163, Elsevier, 154-169, 2005.
- Variational inequalities and applications
  2. E. Allevi, A. Gnudi, I.V. Konnov, G. Oggioni, Decomposition method for oligopolistic competitive models with common environmental regulation, *ANNALS OF OPERATIONS RESEARCH*, DOI 10.1007/s10479-017-2494-3, 2017.
  3. E. Allevi, A. Gnudi, I.V. Konnov, G. Oggioni, Dynamic Spatial Auction Market Models with General Cost Mappings, *Networks and Spatial Economics*, 17(2), 367-403, DOI 10.1007/s11067-016-9330-1, 2016.
  4. R. Riccardi, F. Bonenti, E. Allevi, C. Avanzi, A. Gnudi, The steel industry: a mathematical model under environmental regulations, *European Journal of Operational Research*, Volume 242, Issue 3, 1017–1027, DOI 10.1016/j.ejor.2014.10.057, 2014.
  5. E. Allevi, A. Gnudi, I.V. Konnov, “Combined methods for dynamic spatial auction market models”, *Optimization and Engineering*, Volume 13, Number 3, 401-416, DOI: 10.1007/s11081-011-9154-2, 2012.
  6. E. Allevi, A. Gnudi, I.V. Konnov, S. Schaible, “Gauss–Seidel method for multi-valued inclusions with Z mappings”, *Journal of Global Optimization*, Volume 53, Number 1, 97-105, DOI: 10.1007/s10898-011-9705-2, 2012.
  7. E. Allevi, A. Gnudi, I.V. Konnov, S. Schaible, M.T. Vespucci, “Spatial Auction Markets with Unique Consumer Price”, *Transmission Lines: Theory, Types and Applications*, Nova Science Publishers, 2010.
  8. E. Allevi, A. Gnudi, S. Schaible, M.T. Vespucci, “Equilibrium and least element problems for multivalued functions”, *Journal of Global Optimization*, DOI 10.1007/s10898-009-9440-0, 2010.
  9. E. Allevi, A. Gnudi, I.V. Konnov, “An Extended Gauss-Seidel Method for Multi-Valued Mixed Complementarity Problems”, *Taiwanese Journal of Mathematics*, No. 2B, pp. 777-788, 2009.
  10. E. Allevi, A. Gnudi, M. Innorta, M.T. Vespucci, Cournot Equilibria in oligopolistic electricity markets, *IMA Journal of Management Mathematics*, 21, pp.183–193, 2009.
  11. Allevi, E., Gnudi A., Konnov, I., An extended Gauss–Seidel method for a class of multi-valued complementarity problems, *Optimization Letters*, Publisher Springer Berlin / Heidelberg, Volume 2, Number 4 / August, 2008, 543-553.
  12. Allevi, E., Gnudi A., Konnov, I., Regularization of non-monotone multi-valued variational inequalities with applications to partitionable problems, *P.U.M.A.*, vol.18, No.1-2, 1-12, 2007.
  13. Allevi, E., Gnudi A., Konnov, I., Partitionable variational inequalities with Multi-valued Mappings, *Lecture Notes in Economics and Mathematical Systems*, 583, Springer, Generalized Convexity and Related Topics, editors I. Konnov, D. The Luc, A. M. Rubinov, 91- 100 , 2006.
  14. Allevi, E., Gnudi A., Konnov, I., Schaible, S., Characterizations of relatively generalized monotone maps , *Mathematical Methods of Operations Research*, 65, issue 2, 293-303, 2006.
  15. Allevi, E., Gnudi A., Konnov, I., The proximal point method for nonmonotone variational inequalities, *Mathematical Methods of Operations Research*, 63, issue 3, 553-565, 2006.
  16. Allevi, E., Gnudi, A., Konnov, I., Mazurkevich, E.O., Partitionable mixed variational inequalities, *Variational Analysis and Applications*, F. Giannessi and A. Maugeri, Springer, 133-146, 2005.
  17. Allevi, E., Gnudi A., Konnov, I., Decomposable Generalized vector variational inequalities, *Optimization and Control with Applications*, Springer, L. Qi, K.L. Teo e X.Q. Yang, 497-507, 2004.
  18. Allevi, E., Gnudi A., Konnov, I., Generalized vector variational inequalities over countable product of sets, *Journal of Global Optimization*, 30, 155-167, 2004.
  19. Allevi, E., Gnudi A., Konnov, I., Schaible, S., Non-cooperative games with vector payoffs under relative pseudomonotonicity, *Journal of Optimization Theory and Applications*, vol.118, 2, August, 2003.
- Media for teaching, planning and implementation of e-learning courses
  20. Gnudi, A., Fornasa, W., Lorenzi, A., Malvisi, L., Integration of e-Tutoring in a Blended Learning Course on Mathematics, *Proceedings of LINC 2007 Conference, Technology-Enabled Education: A Catalyst for Positive Change- Amman, Jordan*, 2007.
  21. Gnudi, A., Una metodologia collaborativa per l’insegnamento della matematica in ambiente elearning, *Atti Didamatica 2007*, Cesena, 738-745.
  22. Enrico Cavalli, Adriana Gnudi, Daniela Iovino, Agostino Lorenzi, Lucia Malvisi, Lecturer perception of the effectiveness of blended learning and institutional support mechanisms, *Proceedings of EDEN 2007 Annual Conference*, Napoli, 2007.
  23. G., Cavalli E., Gnudi A., Lorenzi A., Malvisi L., The Virtual Classroom within Blended Learning, *Proceedings of EDEN 2006 Annual Conference*, Vienna, 2006.
  24. Allevi, E., Bertocchi, M., Gnudi, A., Un progetto di tutorato per la didattica attiva in rete. Insegnamento degli integrali, *Nuova secondaria*, Editrice la Scuola, n°8, Anno XXII, 15 aprile 2005.

25. Cavalli E., Gnudi A., Lorenzi A., Milani C., e-learning come servizio integrato in un portale di Ateneo, Atti del Convegno Expo e-learning, Ferrara, 2005.
  26. Agosti G., Cavalli E., Gnudi A., Lorenzi A., Malvisi L., La Classe Virtuale sincrona nell'ambiente e-learning con modalità blended, Didamatica 2005, Potenza, 12-14 maggio 2005.
  27. Gnudi A., Lorenzi A., Lucia Malvisi, Blended learning nel contesto universitario: elementi di valutazione e di confronto tra modalità in presenza e on line per il corso di Informatica, Didamatica 2004, Ferrara, 10-12 maggio 2004.
  28. Gnudi A., Lorenzi A., Malvisi L., An evaluation of an oline ICT course: student perception, support issues and lecturer involvement, 3rd EDEN Research Workshop, Oldenburg, Germany, March 4-6, 2004.
- Books
  - 29. A.Allevi, M.Bertocchi, A.Gnudi, I.V.Konnov, Nonlinear analysis with applications in Economics, Energy and Transportation, Bergamo University Press, Sestante Edizioni.
  - 30. A.Gnudi, Manuale Modulare – Modulo 7 – Equazioni differenziali e alle differenze, Giappichelli Editore.
- Other publications in education
  - 31. V.Caviezel, A.Criscuolo, A.Gnudi, Indagine sul livello delle conoscenze e abilità matematiche nel passaggio dal primo al secondo ciclo l'istruzione nella provincia di Bergamo a.s. 2007-2008, Quaderno DMSIA, Serie MatNet , n°1, 2008.
  - 32. V.Caviezel, A.Criscuolo, A.Gnudi, Indagine sul livello delle conoscenze e abilità matematiche nel passaggio dal primo al secondo ciclo l'istruzione nella provincia di Bergamo a.s. 2008-2009, Quaderno DMSIA, Serie MatNet , n°1, 2009.
  - 33. V.Caviezel, A.Criscuolo, A.Gnudi, Indagine sul livello delle conoscenze e abilità matematiche nel passaggio dal primo al secondo ciclo l'istruzione nella provincia di Bergamo a.s. 2009-2010, Quaderno DMSIA, Serie MatNet , n°1, 2010.
  - 34. V.Caviezel, A.Criscuolo, A.Gnudi, C.Avanzi, Indagine sul livello delle conoscenze e abilità matematiche nel passaggio dal primo al secondo ciclo l'istruzione nella provincia di Bergamo a.s. 2010-2011, Quaderno DMSIA, Serie MatNet , n°1, 2011.
  - 35. V.Caviezel, A.Criscuolo, A.Gnudi, C.Scarpaci, Indagine sul livello delle conoscenze e abilità matematiche nel passaggio dal primo al secondo ciclo l'istruzione nella provincia di Bergamo a.s. 2011-2012, Quaderno DMSIA, Serie MatNet , n°1, 2012.
  - 36. A.Criscuolo, A.Gnudi, S.Vitali, Un'esperienza di learning week per il recupero di competenze nello studio dell'analisi matematica mediante l'uso del software GeoGebra, Quaderno DMSIA, Serie MatNet , n°1, <http://hdl.handle.net/10446/28873>, 2013.
  - 37. C.Avanzi, V.Caviezel, A.Criscuolo, A.Gnudi, C.Scarpaci, Indagine sul livello delle conoscenze e abilità matematiche nel passaggio dal primo al secondo ciclo l'istruzione nella provincia di Bergamo , aa.ss. 2012-13, 2013-14, Quaderno DMSIA, Serie MatNet , n°1, <http://hdl.handle.net/10446/30904>, 2014.

## SHORT CV

### Academic positions

- Current position: Full Professor Mathematical Methods for Economics and Actuarial and Financial Sciences (SECS - S/06) at the Department of Management, Economics and Quantitative Methods, University of Bergamo.

### Academic activities

- Since 2006 the director of Matnet, Centre for the Education of Mathematics, University of Bergamo.
- From 2000 to 2007, responsible for the guidance for the Faculty of Economics, University of Bergamo.
- Since 2010 Head of the local unit of Bergamo for the National Scientific Degrees.
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Member of the organizing committee of conferences and schools, in particular:

- INTAS Summer School, "Nonlinear analysis with applications in Economics, Energy and Transportation", Bergamo, 5-9 June, 2006.

- Summer school "Meet the mathematics, physics and statistics", San Pellegrino Terme (BG) since 2006.

#### Research

Models of equilibrium and variational inequalities. Theoretical and algorithmic aspects - Dynamic models in economics - Use of e-learning in university education. Methodologies and tools.

#### Quality and relevance of publications:

Author/coauthor of more than 35 papers on national and international journal and proceedings.

In particular, it is worth noticing that 10 papers have been published in ISI Journals indexed in both WebOfScience and Scopus:

1 paper in JOTA (IF2014: 1.509, 5YIF:1.625), 2 papers in EJOR (IF2014: 2.358, 5YIF:2.911), 2 papers in JOGO (IF2014: 1.287, 5YIF:1.445), 1 paper in Opt. Lett. (IF2014: 0.934, 5YIF:1.074), 1 paper in IMA J. Man. Math (IF2014: 0.5, 5YIF:0.592), 1 paper in Opt. and Eng. (IF2014:1.233, 5YIF:1.236), 2 paper MMOR (IF2014:0.625, 5YIF:0.889).