Curriculum Vitae of Benedetto Piccoli

Distinguished Professor and Joseph and Loretta Lopez Chair Professor of Mathematics
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Education

PhD in Mathematics, SISSA-ISAS (Triest,Italy) 1994, Supervisor: A. Bressan.
Master in Mathematics, SISSA-ISAS (Triest, Italy) 1993, 30/30 cum laude.
Laurea Degree in Mathematics, University of Padua 1991, 110/110 cum laude.

Academic Positions

Vice Chancellor for Research, Rutgers University - Camden 1/20-ongoing.
Associate Provost for Research, Rutgers University - Camden 1/16-12/19.
Distinguished Professor, Rutgers University - Camden 7/15-ongoing.
Joseph and Loretta Lopez Chair Professor of Mathematics, Rutgers University - Camden 9/09-ongoing.
Director, Center for Computational and Integrative Biology, Rutgers University - Camden, 10/14 to 12/15.
Graduate Program Director, Center for Computational and Integrative Biology, Rutgers University - Camden, 10/11 to 09/14.
Full Professor, Rutgers University - Camden 09/09 to 06/15.
Research Director, IAC – CNR (Italy) 12/01 to 09/10.
Associate Professor, University of Salerno (Italy) 11/98 to 12/01.
Researcher, SISSA-ISAS (Italy) 12/94 to 10/98 (tenured since 12/97).
Visiting positions, Rutgers University (Sept 95- March 96), Université de Paris Sud, Orsay (May 2000, July 2002).

Prizes and Honors

American Mathematical Society Fellow, inaugural class of fellows 2012.
Invited Speaker (Plenary), International Congress of Industrial and Applied Mathematics 2011, Vancouver.
Fubini Prize 2009 given by Istituto Superiore "Mario Boella", in collaboration with Polymath of Torino and the Association "Subalpina Mathesis".

Scientific Activity

Research Interests:

Systems Biology: optimal control for bio-medical and bio-mechanical systems: swing and ski models, animal groups, HIV infections, cancer immuno-therapies, developmental biology, biological rhythms, quantitative systems pharmacology, metabolic networks, forensic science, Covid-19 pandemic.
Networks: traffic flow on networks : theory, numerics and applications; ode and pde models, multiscale models, models coupling, vehicular traffic, mobile sensors data, autonomous and connected vehicles, supply chains, data networks, water canals, infectious disease spread on networks.
Partial Differential Equations: hyperbolic systems of conservation laws: Cauchy problem, nonclassical shocks; hyperbolic–elliptic systems, elastodynamics, pde methods for signal analysis, Wasserstein distances, measure differential equations.
Control Systems: controlled systems, differential inclusions, discontinuous ODEs, optimal control, optimal syntheses, hybrid systems, quantized systems, cooperative controls, stochastic control and algorithms, mechanical, automotive and robotics applications, sparse control to consensus, social dynamics.
Mathematical finance: Public Debt management, interest rate models.

Research Funding

European TMR Network "Hyperbolic systems of conservation laws", 1996-2000.
European TMR Network, "Nonlinear control systems", Italian group, 1998-2002.
Coordinator Italian project Ex-60% 2000 grant for DIIMA, University of Salerno.
Local Coordinator National Italian Project Cofin2000, "Hyperbolic systems".
Local Coordinator, Italian CNR Project, Agenzia 2000.
National Italian Project Cofin2001, "Feedback and optimal control".
Local Coordinator EU Multipartner Marie Curie Training Site, IAC–CNR, Control Trainig Site, 2002-2006.
National Italian Project Cofin2002, University of Rome "Tor Vergata" group, "Nonlinear hyperbolic and parabolic equations".
European Research Training Network Programme: HYperbolic and Kinetic Equations (HYKE), 2002-2005.
Coordinator for Italian Ministry of the Economy and Finance project (with M. Bernaschi), "Public Debt Management" with the , 2002–2006.
Coordinator of Italian research project GNAMPA "Distributional properties of stochastic control processes and their applications to portfolio optimization", 2003.
Italian research project FIRB 2003 project "Public debt management".
Local coordinator for Italian project ICT, IAC, 2003 "Goethe".
National coordinator of Italian research project GNAMPA "Optimal strategies for the public debt management", 2004.

National coordinator of Italian research project, INDAM, "Control Theory and Numerics", 2004.
Local Coordinator of European Network of Excellence HYCON "Hybrid control: taming heterogeneity and complexity of networked embedded systems", 2004-8.
Steering committee of European Science Foundation project AMaMeF "Advanced Mathematical Methods in Finance", 2005-2010.
National coordinator Italian research project for INDAM "Traffic flows and optimization on complex networks", 2005-2006.
Local coordinator of Italian research project of FIRB 2005 CASHMA "Context Aware Security by Hierarchical Multilevel Architectures".
Research agreement between ATAC S.p.A. and Istituto per le Applicazioni del Calcolo "Mauro Picone" (IAC), 2007-9.
Italian project PRIN 2007 on Hyperbolic systems of conservation laws.
Coordinator for European project Galileo 2008-09, Italy-France NUSMAIN (new mathematical tools for Infomobility).
Coordinator for Italian industrial project IAC-Selex SI collaboration on "Stochastic algorithms for simulation of radar signals", 2009-10.
Co-PI for NSF STEP project entitled "Q-STEP Community of Quantitative Scientists", Rutgers-Camden, 2009-2014.
Principal Investigator for Rutgers Research Council Grant "Advanced modeling for pedestrian motions", 2011-12.
Node coordinator for NSF Research Network "KI-Net": kinetic description of emerging challenges in multiscale problems of natural sciences, 2012-ongoing.
Co-PI for Rutgers Faculty Research Grant "EFGR Signaling Diversification: An Interdisciplinary Research Approach", 2012-13.
Co-PI for NIH R15 project "AREA: Mechanisms Underlying EGFR Signaling Distribution in Epithelial Tissues", 2013-16.
Principal Investigator for NSF REU project "REU site: Computational Biology Summer Program at Rutgers-Camden", 2013-16.
Principal Investigator for Rutgers Research Council Grant "Octocopter to study birds' flight formations", 2014/15.
Principal Investigator for NSF CPS project "CPS: Synergy: Collaboration Research: Control of Vehicular Traffic Flow Via Low Density Autonomous Vehicles" in collaboration with University of Illinois at Urbana-Champaign, Temple University and University of Arizona (total budget 1M), 2015-18.
Member of French INRIA associate team project ORESTE.
Principal Investigator Rutgers Camden – Sanofi research project "Optimization and simulation for Systems Pharmacology in the Pharmaceutical Industry", 2015-16.
Principal Investigator for NSF REU project "REU site: Computational Biology Summer Program at Rutgers-Camden", 2016-19.
co-PI for 2017 Rutgers Grant Awards in Big Data Analytics "Crowd-Centric Security Big Data Analytics and Risk Management".

co-PI for 2018-2019 Conference and Symposium Grant for "Data for Population Health", Faculty of Arts and Science, Rutgers University - Camden.
co-PI for 2018 Rutgers ORED Interdisciplinary Research Group Grant "Human Centered Design with Communities for Individual and Population Health".
Principal Investigator for NSF Synergy CPS project "STEAD" in collaboration with University of California at Berkeley, University of Pennsylvania, Vanderbilt University (total budget 1.4M), 2019-21.
Principal Investigator for International Collaborative Research Grant proposal "Mean-field game models for traffic application," Rutgers Global Grant 2019-20.
Principal Investigator for DoE EERE project "CIRCLES" in collaboration with University of California at Berkeley, Temple University, University of Arizona, Vanderbilt University (total budget 3.5M), 2020-22.
Co-PI for Rutgers CCRP2 Intramural COVID-19 Research project "Democratizing Joint Multiscale Modeling of Movement, Policy, and Spread of Infectious Diseases", PI Mubbasir Kapadia (RU-NB Computer Science), 2020.

Students

Postdoctoral Researcher.
Amaury Hayat, Rutgers-Camden, 2019–20.
Xiaoqian Gong, Rutgers-Camden, 2019–20.
Sean McQuade, Rutgers-Camden, 2019–20.
Thibault Liard, Rutgers - Camden, 2017–18.
Giulia Cavagnari, Rutgers - Camden, 2017–18.
Maria Laura Delle Monache, Rutgers - Camden, 2014–16.
Marco Caponigro, Rutgers - Camden, 2011–12.
Roberta Ghezzi, Rutgers - Camden, 2011–12.
Emiliano Cristiani, Cemsac and IAC-CNR, 2008–10.
Paolo Frasca, IAC-CNR, 2008–10.
Luca Greco, IAC-CNR, 2007–9.
Paolo Mason, IAC-CNR, 2007–8.
Andrea Tosin, IAC-CNR , 2007–8.
Jean–Marc Mercier, SISSA-ISAS, (1997–98 and 1999–2000).
Paolo Baiti, University of Padua, (1997–98 and 1998–99).

PhD Students.
Zheming An, Rutgers University - Camden, expected Spring 2021.
Nathaniel Merrill, Rutgers University - Camden, "Linear-In-Flux-Expression (LIFE) approach to dynamic biological networks", 2020.
Sean McQuade, Rutgers University - Camden, "Modeling Bio-Networks at Multiple Scales", 2019.
Nastassia Pouradier Duteil, Rutgers University - Camden, "Models for pattern for-

mation in biological systems", 2017.
Antonio Cappuccio, University of Rome La Sapienza, "Modelling and control of immunological systems", 2006.
Mauro Garavello, SISSA-ISAS, "Control of Distributed and Hybrid Systems", 2004.
Ugo Boscain, SISSA-ISAS, "Morse properties and extremal synthesis for minimum time in 2-D", 2000.

Co-supervised and visiting:

Nicole Revaitis, co-supervised with Nir Yakoby, Rutgers University - Camden, 2019.
Harish Swaminathan, co-supervised with Desmond Lun, Rutgers University - Camden, "Computational methods for the interpretation of forensic DNA samples", 2015.
Matthew Niepielko, co-supervised with Nir Yakovy, Rutgers University - Camden, "Changes in BMP and EGFR signaling components underlie the evolution of Drosophila eggshell morphologies", 2014.
Amelio Maurizi, co-supervised with Corrado Lattanzio, University of L'Aquila, Italy, "Moving Bottlenecks in Car Traffic Flow: Modeling, Analysis and Simulations", 2010.
Nevio Dubbini, co-supervised with Antonio Bicchi, University of Pisa, "Left invertibility of I/O quantized systems", 2010.
R. Frattaruolo, co-supervised with Ciro D'Apice, University of Salerno, Italy, "Optimization methods for a supply chain ode-pde model", 2010.
Alfredo Cutolo, co-supervised with Ciro D'Apice, University of Salerno,"SPA.DA Modeler, a tool for the modellization of spatial data: the visual environment", 2009.
Nunzia Cascone, co-supervised with Ciro D'Apice, University of Salerno,"Modelling and Optimization of Traffic Flows on Networks", 2008.
Luigi Rarita, co-supervised with Ciro D'Apice, University of Salerno,"Control problems for flows on networks", 2008.
Rosanna Manzo, co-supervised with Ciro D'Apice, University of Salerno, "Fluid Dynamic Models for Telecommunication Networks and Supply Chains", 2007.
Ewa Girejko, CTS visiting PhD student, Sept 2004 - Mar 2005.
Katarzyna Zadarnowska, CTS visiting PhD student, July 2004 - Jan 2005.
Isaac Corro Ramos, CTS visiting PhD student, Jan-June 2004.

Masters Students (including visiting).

Maelys Lerat (visiting from Ecole Polytechnique, Paris), Spring-Summer 2019.
Remi Robin (visiting from Ecole Polytechnique, Paris), Spring-Summer 2018.
Anais Rat (visiting from Ecole Centrale, Marseille), Spring-Summer 2017.
Zheming An, Rutgers University - Camden, 2017-8.
Joseph-Andre Turk (visiting from Ecole Polytechnique, Paris), Summer 2016.
Aylin Aydogdu, Rutgers University - Camden, 2015-2016.
Sebastien Ohanian (visiting from University of Marseille), Summer 2014.
Quentin Watel (visiting from University of Marseille), Summer 2014.
Man Yu Wong (visiting from Ecole Polytechnique, Paris), Spring/Summer 2014.
Pierre Camilleri (visiting from Ecole Polytechnique, Paris), Spring/Summer 2013.

Monge Cadet (visiting from Ecole Polytechnique, Paris), Spring/Summer 2013.
Nourdine Ait Kaddour (visiting from University of Marseille), Spring/Summer 2013.
Maxime Agostini (visiting from University of Marseille), Spring/Summer 2013.
Matthieu Peltier (visiting from Ecole Polytechnique, Paris), Spring/Summer 2012.
Benjamin Heymann (visiting from Ecole Polytechnique, Paris), Spring/Summer 2012.
Anupam Simlot, Rutgers-Camden, 2010-11.
Yosief Wondmagegne, International Center for Theoretical Physics (Trieste), 1997.

Undergrad Students (at Rutgers).
Georgi Chubinize, Summer 2020.
Paige Arnold, Spring 2020.
Sydney Truong, 2019–20, Dean's Undergraduate Research Prize and the Mathematical Sciences Scholarship Award.
NSF REU student: Caleb Robelle, Summer 2018.
NSF REU student: Olivia Zapfe, Summer 2017.
NSF REU student: Raji Dinka, Summer 2016.
Kyra Jenkins, Undergraduate Research Grant at Rutgers - Camden, Spring 2016.
Millicent Kipp, Undergraduate Research Grant at Rutgers - Camden, Spring 2016. (Dean's Undergraduate Research Prize.)
NSF REU students: Juliette Daily and Jamie Ferns, Summer 2015.
NSF REU students: Brain Cheung and Umair Tariq, Summer 2014.
NSF REU: Bryan Gachomo, Julianne Thornton, Tevin Wilson, Summer 2013.
Conor Knight, Summer Undergraduate Research Grant , Summer 2012.
Emily Leibowitz, Summer Undergraduate Research Grant , Summer 2011.

Organisation of Conferences (last 10 years).

Technical Program Committee of Robocomm 2009.
Director for CIME course "Modelling and Optimisation of Flows on Networks", June 15 - 19 2009, Cetraro (CS), Italy.
Scientific Program Committee for Conference "Control of Partial Differential Equations" CIRM Luminy (FRANCE) January 25-29 2010.
Organizing committee of "Hyperbolic Systems and Control of Networks", IHP Paris 18-20 October 2010.
Panel 7: Mathematical Programing and Industrial Applications-2 for ICIAM 2011.
Organizing committee of "Mathematics of Traffic Flow Modeling, Estimation and Control", IPAM Workshop, UCLA, December 7 - 9, 2011.
Organizing committee of "Traffic Modeling and Management: Trends and Perspectives", INRIA, Sophia Antipolis, March 20-22, 2013.
International Program Committee and Organizer of Invited Session "Modeling and Control of Collective Dynamics" , 1st IFAC Workshop on Contol of System Modelled by PDEs, Paris, France, September 25-27, 2013.

International Program Committee of the 13th European Control Conference, Strasbourg, France, June 24–27 2014.
Organizing Committee of Ki-NET Conference "Modeling and Control in Social Dynamics", Rutgers University - Camden, October 6–9 2014.
International Program Committee of the 4th, International Conference on Operations Research and Enterprise Systems" - ICORES, Lison, Portugal, January 10–12, 2015.
Organizing Committee of the IPAM (UCLA) Workshop "Mathematical Foundations of Traffic", Los Angeles, CA, September 28 – October 2, 2015.
International Program Committee of IFAC workshop on Control of Systems Governed by PDEs 2016 , Bertinoro, Italy, 13–15 June 2016.
Scientific Committee of "Nonlinear Partial Differential Equations and Applications" in honor of Jean-Michel Coron's 60th birthday, Paris, June 20–24 2016.
Special session organizer, "Traffic Flow Models and Their Application in Traffic Engineering", 11th AIMS Conference on Dynamical Systems, Differential Equations and Applications, Orlando, FL, July 1–5, 2016.
Program Committee member for the 55th IEEE Conference on Decision and Control 2016, Las Vegas, NV, December 12–14 2016.
Organizing Committee of ICERM Topical Workshop "Pedestrian Dynamics: Modeling, Validation and Calibration", Brown University, August 21–25 2017.
International Program Committee of 2019 IFAC Conference on Control of PDE's, Oaxaca, Mexico, May 20–24 2019.
Organizing Committee of CIRM conference "Crowds: models and control", CIRM Marseille June 3–7 2019.
Steering committee of "Towards a New Jersey Population Cohort Study", Institute for Health, Health Care Policy and Aging Research (IFH), April 9th 2019.
Organization Committee for the Workshop "Lagrangian Control for Traffic Flow Smoothing in Mixed Autonomy Settings" at the IEEE CDC 2019.
Conference Organizing Committee of The 8th International Symposium on Dynamic Traffic Assignment, June 29 to July 1, 2020.
Scientific Board of ECCOMAS Thematic conference: Math 2 Product (M2P), Thematic Conferences of the European Community on Computational Methods in Applied Sciences 2020.

Editorial activity

Founding Editor and Editor in Chief for SI of "Networks and Heterogeneous Media", 2006-ongoing. **Corresponding Editor** of ESAIM: Control, Optimisation and Calculus of Variations, 2003-ongoing. **Associate Editor** of Mathematical Control and Related Fields, 2017-ongoing. **Associate Editor** of Nonlinear Analysis, 2020-ongoing. **Editorial Advisory Board** of Open Mathematics, 2014-16. **Associate Editor** of Journal of Dynamical and Control Systems, 2003-2014. **Associate Editor** of Discrete and Continuous Dynamical Systems – Series B, 2003-2014. **As-**

sociate Editor of SIAM Journal on Control and Optimization, 2005-2014. **Editor** of electronic Proceedings of "Control Systems: Theory, Numerics and Applications", Rome March 2005, pos.sissa.it **Editor** for SIAM Journal on Control and Optimization Special Issue on "Control and Optimization in Cooperative Networks" with F. Bullo and J. Cortes.

Selected seminars and invited talks

Workshop on Nonsmooth Analysis and Geometric Methods in Deterministic Optimal Control, IMA, Minneapolis, February 1993. **Workshop on Differential Inclusions**, International Banach Center,Warsaw, May 1993. **AMS Summer Research Institute "Geometric control theory"**, Boulder, Colorado, July 1997. **V.I. Arnold Seminar**, Moscow University, September 1997. **Workshop on nonlinar control systems**, IHP, Paris, January 1998. **Workshop on hyperbolic conservation laws**, Lisbon, April 1999. **Equadiff'99**, Berlin, August 1999. **HYP 2000: Hyperbolic conservation laws**, Magdeburg, February 2000. **NCN Pedagogical School on Optimal Control**, Coimbra, September 2001. **Workshop on Pisot Numbers and Real Number Computations**, Rome, October 2001. **UMI-AMS Joint Meeting**, Pisa, June 2002 (2 invited lectures). **Trimester on Dynamical and Control Systems**, SISSA-ICTP, Sept. 8 - Dec. 7, 2003. **CIRA summer school**, Bertinoro, Forli, 2003. **IFAC Workshop NOLCOS 2004**, Stuttgart, September 2004. **IPERPI04**, hyperbolic problems, University of Pisa, October 2004. **Around HYperbolic and Kinetic Equations 3**, meeting of the HYKE network, Rome, 13-15 April 2005. **1st HYCON PhD School on Hybrid Systems**, University of Siena, July 19-22, 2005. **Mathematical Models of Traffic Flow**, Nice University, November 2-4, 2005. **Optimal transport: theory and applications**, Centro DeGiorgi, Pisa, November 14-18, 2006. **IEEE Conference on Decision and Control**, 1995 New Orleans, 1997 San Diego, 1998 Tampa, 1999 Phoenix, 2000 Sidney, 2002 Las Vegas, 2003 Maui, 2004 Nassau, 2005 Sevilla. **Plenary Speaker International Workshop on "Nonlinear Hyperbolic Problem: a perspective view on conservation laws"** , Istituto Nazionale di Alta Matematica (INDAM), Rome, May 2007. **Workshop on "Direct, Inverse and Control Problems for PDE's DICOP"**, Rome, June 2007. **Annual HYCON Conference 2007**, L'Aquila, September 2007. **Workshop on "Mathematical Models of Traffic Flow"**, CIRM, Marseille-Luminy, October 2007. **Workshop on "Italy in Flames - Causes - Competences - Responsibilities - Proposes"**, Camera dei Deputati, Rome, October 2007. **Workshop on "Evolution Equations and Kolmogorov Operators"**,University of Salerno, Fisciano, October 2007. **Plenary speaker 12th International Conference Hyp2008 "Hyperbolic problems : theory, numerics and applications"**, College Park, Maryland, 9-13 June 2008. **Plenary speaker STAMM 08** Conference, Trento, Italy, 22-25 September 2008. **Plenary speaker IPERBA09** XIII National meeting on hyperbolic problems, Bari, Italy, 11-13 February 2009. **Invited speaker** Workshop on Interdisciplinary Mathematics, May 10-11, 2010, PennState University, Sate College, PA. **LIDS Colloquium** , M.I.T., Cambdridge, MA, March 15th 2011. **Math Colloquium** , Rutgers University New Brunswick, NJ, March 25th 2011. **Invited speaker** "Kinetic Description of Multiscale Phenomena", University of Wisconsin - Madison, WI, May 23-27, 2011. **Invited speaker ICIAM 2011**

International Congress on Industrial and Applied Mathematics, Vancouver, Canada, July 18-22 2011. **CSCAMM seminar**, University of Maryland College Park, MD, October 5th 2011. **Invited speaker** RUTCOR-DIMACS Workshop on Stochastic Networks, Rutgers University, New Brunswick, NJ, October 12-14, 2011. **Mathematics Coloquium**, Temple University, Philadelphia, PA, October 2011. **Applied Analysis Seminar**, PennState University, College State, PA, May 2012. **CSMD Seminar Series**, Oak Ridge National Laboratory, TN, May 15-17, 2012 **SADCO Summer School** "New Trends in Optimal Control", Ravello, Italy, September, 3-7, 2012. **NITRD Workshop on Complex Engineered Networks**, Washington DC, Sept. 20-21, 2012. **KI-Net Workshop: Kinetic description of social dynamics: From consensus to flocking**, College Park, MD, November 5-9, 2012. **Decision and control seminar**, Coordinated Science Lab, University of Illinois at Urbana Champaign, February 27 2013. **PDE seminar**, Brown University, May 3rd 2013. **American Control Conference 2013**, invited session on "Vehicle Control and Estimation in the Undersea Environment", Washington, June 17-19 2013. **SIAM Conference on Control and Its Applications**, invited session on "Geometric methods for PDEs: modeling and control", San Diego, CA, July 8-10 2013. **51st Annual Allerton Conference on Communication, Control and Computing 2013**, invited session on "Vehicular Traffic", Allerton, IL, October 2–4, 2013. **Plenary Speaker at Conference on New Trends in Optimal Control**, Tours, France, June 23–27 2014. **ICIAM 2015**, invited session on "Industrial Mathematics around the world, Beijing, August 10–15 2015. **Math Colloquium** of Drexel University, Philadelphia, November 9th 2015. **11th Meeting on Nonlinear Hyperbolic PDEs and Applications**, Invited Speaker, Triest, Italy, June 13–17 2016. **The 11th AIMS Conference on Dynamical Systems, Differential Equations and Applications**, Invited Speaker, Orlando, FL, July 1–5, 2016. **Paths in Mathematical Control Theory** in honor of Andrea Bacciotti and Luciano Pandolfi 70th birthday, Plenary speaker, Turin, Italy, February 26–27 2018. **Joint Mathematics-Mechanical and Aerospace Engineering Colloquium**, University of Colorado at Colorado Springs, March 2nd 2018. **14th SIAM Front Range Applied Math Student Conference**, Keynote speaker, University of Colorado at Denver, March 3rd 2018. **UC Berkeley ITS colloquium**, Berkeley, April 5th 2019.

Teaching Activity

PhD and Graduate courses.

- 1994/95 SISSA "Mathematical Control Theory".
- 1995/96 SISSA "Systems of Conservation Laws".
- 1996/97 SISSA "Topics in Control Theory".
- 1997/98 SISSA "Geometric Control Theory".
- 1999/00 University of Naples "Hyperbolic Systems of Conservation Laws".
- 1999/00 SISSA "Optimal and Asymptotic Stabilization of Control Systems".
- 2000/01 SISSA "Synthesis Theory in Optimal Control".
- 2001/02 SISSA "Introduction to Control Theory".
- 2002/03 University of Rome "La Sapienza", Master course "Motion Planning for Control Systems".
- 2002/03 SISSA "Introduction to Stochastic control".
- 2003/04 SISSA, Trimester on Dynamical and Control Systems, "Optimal Syntheses".
- 2003/04 University of Rome "La Sapienza", "Stochastic Control and applications to Finance".
- 2003/04 SISSA "Introduction to Mathematical Finance".
- 2004/05 University of Rome "La Sapienza", "Stochastic Control and applications to Finance".
- 2004/05 University of Salerno, "Fluidodynamc models for car traffic on networks".
- 2005/6 INDAM and University of Rome "La Sapienza", "Traffic flow on networks"
- 2006/7 University of Rome "La Sapienza", "Traffic flow on networks"
- 2007/8 University of Rome "La Sapienza", "Traffic flow on networks"
- 2008/9 University of Rome "La Sapienza", "Traffic flow on networks"
- 2009/10 Rutgers University, "Mathematical Methods for Systems Biology"
- 2010/11 Rutgers University, "Mathematical Methods for Systems Biology I"
- 2010/11 Rutgers University, "Mathematical Methods for Systems Biology II"
- 2011/12 Rutgers University, curriculum development, DIMACS-Bowdoin College-MCRN "Sustainable Planet Education Workshop", October 20-22, 2011.
- 2011/12 Rutgers University, "Mathematical Methods for Systems Biology I"
- 2011/12 Rutgers University, "Mathematical Methods for Systems Biology II"
- 2011/12 Rutgers University Graduate Indepedent Studies: Richard Connor, Nacir Hmidouch, Minyoung Kim, Shamima Nasrin.
- 2012/13 Rutgers University, "Essentials of Biomathematics I"
- 2012/13 Rutgers University, "Mathematics for Systems Biology"
- 2013/14 Rutgers University, "Essentials of Biomathematics I"
- 2013/14 Rutgers University, "Mathematics for Systems Biology"
- 2014/15 Rutgers University, "Essentials of Biomathematics I"
- 2014/15 Rutgers University, "Mathematics for Systems Biology"
- 2015/16 Rutgers University, "Mathematics for Systems Biology"
- 2015/16 Rutgers University Graduate Indepedent Studies: Abdulrhman Areshie
- 2016/17 Rutgers University, "Essentials of Biomathematics I"
- 2016/17 Rutgers University Graduate Indepedent Studies: Albandari Alhejaili
- 2017/18 Rutgers University, "Mathematical Methods for Systems Pharmacology"

- 2017/18 Rutgers University Graduate Indepedent Studies: Chris Sottolano
- 2018/19 Rutgers University, "Essentials of Biomathematics I"
- 2019/20 Rutgers University, "Essentials of Biomathematics I"

PhD Program Committees

- SISSA, PhD in Functional Analysis and Applications, 1994-98.
- University of Salerno, PhD in Mathematics, 2006-2013.
- LUISS University, Rome, PhD in Mathematical Methods for Economy, Business, Finance and Insurances, 2006-2010.
- University of Rome "La Sapienza", PhD in Mathematical Models and Methods for Technology and Society, 2008-.
- Rutgers University - Camden, PhD in Computational and Integrative Biology, 2010-.

Undergraduate Courses.

- 1992/93 and 93/94 Teaching Assistent, University of Padova, "Calculus" and "Calculus in many variables" for Electronic and Civil Engineering.
- 1994/95 Rutgers University "Calculus" for Pre-Med and others.
- 1996/97 ICTP (Trieste) "Calculus in many variables" for Diploma Course.
- 1998/99 University of Salerno "Mathematics 2" (Linear Algebra, Calculus in many variables) for Electronic and Mechanical Engineering.
- 1999/00 University of Salerno "Mathematics 2,3 and 4" (Linear Algebra, Calculus in many variables, Complex analysis, Fourier and Laplace transforms, Differential equations) for Electronic and Chemical Engineering.
- 2000/01 University of Salerno "Mathematics 1,3 and 4" (Calculus, Complex analysis, Fourier and Laplace transforms, Differential equations) for Electronic and Chemical Engineering.
- 2009/10 Rutgers University "Math Seminars" (Introduction to continuous ode and pde models for vehicular traffic).
- 2014 University of Padua, "Scuola Galileiana" (Calculus of variations, module: sparse control of multi-agent systems).
- 2015 Rutgers University "Partial Differential Equations and Boundary Value Problems".
- 2018 Rutgers University "The Joy of Math".

Pre-University Orientation.

- 2006 Scuola Normale Superiore di Pisa-San Miniato "The Impact of Applied Mathematics in Modern Society".
- 2007 Scuola Normale Superiore di Pisa-San Miniato "The Mathematics of Vehicular Traffic".

Prizes.

- 2013 Chancellor's Award for Teaching Excellence, Rutgers University - Camden.

PUBLICATIONS

Books

1. U. Boscain, B. Piccoli: Optimal Synthesis for Control Systems on 2–D Manifolds, *SMAI Springer Series: Mathématiques et Applications vol. 43, Springer Verlag, New York – Heidelberg, 2004.*
2. M. Garavello, B. Piccoli: Traffic flow on networks, *Applied Math Series vol. 1, American Institute of Mathematical Sciences, Springfield, 2006.*
3. A. Bressan, B. Piccoli: Introduction of Mathematical Theory of Control, *Applied Math Series vol. 2, American Institute of Mathematical Sciences, Springfield, 2007.*
4. C. D'Apice, S. Goettlich, M. Herty, B. Piccoli: Modeling, Simulation and Optimization of Supply Chains. A Continuous Approach, *SIAM book series on Mathematical Modeling and Computation, Society for Industrial and Applied Mathematics (SIAM), Philadelphia, PA, 2010.*
5. E. Cristiani, B. Piccoli, A. Tosin: Multiscale Modeling of Pedestrian Dynamics, *Springer MS&A: Modeling, Simulation and Applications, Vol. 12, Springer-Verlag, Heidelberg-Berlin, 2014.*
6. M. Garavello, K. Han, B. Piccoli: Models for Vehicular Traffic on Networks, *Applied Math Series vol. 9, American Institute of Mathematical Sciences, Springfield, 2016.*
7. A. Bayen, M.L. Delle Monahce, M. Garavello, P. Goatin, B. Piccoli: Control Problems for Conservation Laws, *submitted for publication to Progress in Nonlinear Differential Equations and Their Applications, subseries in Control, Springer Nature.*

Edited Books

8. B. Piccoli and M. Rascle Eds.: Modelling and Optimisation of Flows on Networks, *Springer CIME Lecture Notes 2062, Springer, Berlin Heidelberg, 2013.*

Lecture Notes

9. B. Piccoli: Optimal Control, *chapter of the book "Foliations on surfaces" by I. Nikolaev, Ergebnisse der Mathematik und ihrer Grenzgebiete, A Series of Modern Surveys in Mathematics, vol. 41, pp. 391–401, Springer-Verlag, New York 2000.*
10. U. Boscain, B. Piccoli: A Short Introduction to Optimal Control, *Lecture Notes for the CIMPA School, Tlemcen, Algeria, 2003. In "Controle non lineaire et applications", T. Sari ed., Collection Travaux en Cours, Hermann, Paris, 2005.*

Research papers in journals

11. G. Crasta, B. Piccoli: Bang–bang property for Bolza problems in two dimensions, *Journal of Optimization Theory and Applications*, **83** (1994), 155–165.

12. A. Bressan, B. Piccoli: A Baire Category approach to the Bang-Bang Property, *Journal of Differential Equations*, **116** (1995), 318–337.

13. G. Crasta, B. Piccoli: Special bang–bang solutions of nonlinear control problems, *Nonlinear Differential Equations and Applications*, **2** (1995), 323–339.

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