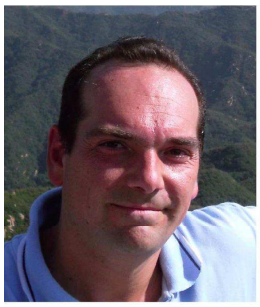
# Europass Curriculum Vitae



## Personal information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| Name / Surname | **Matteo Nicolini** |
| Address | Polytechnic Department of Engineering and Architecture (DPIA)<br>University of Udine, Udine (Italy) |
| Personal Email | matteo.nicolini@uniud.it |
| Nationality | Italian |
| Date of birth | 21.11.1968 |
| Chartered Engineer of the Institution of Engineers of Padova, n. 3113 | |


## Career highlights

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| Since November 2005 | Assistant Professor, Department of Chemistry, Physics and Environment (DPIA since January 2016), University of Udine, Scientific Sector ICAR02 (Hydrology and Hydraulic Structures). |
| November 1999 - October 2005 | Research Assistant, Department of Georesources and Territory, Faculty of Engineering, University of Udine, Scientific Sector ICAR02 (Hydrology and Hydraulic Structures). |
| November 1996 - October 1999 | Ph.D. student, Department of Chemical Sciences and Technologies, University of Udine. |
| November 1997 - April 1999 | Research collaborator for the Center for Energy and Environmental Technologies (TEA), Consorzio Pisa Ricerche, University of Pisa. |

## Research areas

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| 1 | Evolutionary algorithms for energy optimization of water distribution and irrigation systems. |
| 2 | Simulation models for optimal management of urban distribution and drainage networks. |
| 3 | Operation research and Soft Computing techniques applied to water resources planning and management. |
| 4 | Two-dimensional numerical modeling for the hydrodynamic analysis of flooding phenomena in urban areas. |

## Education

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| March 2000 | Ph.D. in Chemical and New Material Technologies, University of Udine. Thesis title: *Influence of morphological and climatological factors on the transport of suspended solids at river outlets*. Supervisor: Prof. P. Andreussi, University of Pisa. |
| August 1995 - February 1996 | Post-graduated course: *Experts in Project Management*. University of Padova and CUOA (Vicenza). Supervisor: Ing. G. Manni. |

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| June 1995 | Five-year degree in Hydraulic Engineering, University of Padova (110/110). Dissertation Title: *Structure and characteristics of ship-generated waves: an application to the Lagoon of Venice*. Supervisors: Prof. G. Liberatore and Prof. L. D'Alpaos. |

## Referee activity

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| International Journals | J. of Water Resources, Planning and Management (American Society of Civil Engineers - ASCE); J. of Hydroinformatics; Water Resources Management; European J. of Operational Research; Water MDPI; Sustainability MDPI; J. of the Taiwan Institute of Chemical Engineers; Urban Water Journal; Desalination and Water Treatment Journal; J. of Medical Engineering |
| International Meetings on Artificial Intelligence and Optimization | IEEE CEC 2023 - *IEEE Conference on Evolutionary Computation*, Chicago (USA). IEEE WCCI 2022 - *IEEE World Conference on Computational Intelligence*, Padova. IEEE CEC 2021 - *IEEE Conference on Evolutionary Computation*, Poland (virtual). IEEE CEC 2020, Glasgow, UK. IEEE CEC 2019, Wellington, New Zealand. IEEE CEC 2018, Rio de Janeiro, Brazil. IEEE CEC 2017, San Sebastian, Spain. IEEE CEC 2016, Vancouver, Canada. GECCO 2013 - *Genetic and Evolutionary Computation Conference*, Amsterdam, The Netherlands. GECCO 2012, Philadelphia, Pennsylvania (USA). GECCO 2011, Dublin, Irleand (UK). GECCO 2010, Portland, Oregon (USA). CCWI 2013 - *Computing and Control for the Water Industry*, Exeter (UK). |

## European Projects as external consultant

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| Interreg IV Italy-Austria GAP-UK (2010-2012) | Environmental sustainability in the use of water resources: innovative methodologies for the operational management of aquifer and water distribution systems. |
| Interreg IV Italy-Slovenia ISO (2013-2015) | Modeling and optimization of urban collection and drainage sytems. |

## Seminars and Invited Lectures

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| September 3rd, 2020 | *Optimal planning and management of regional water distribution systems*, ESOF 2020, Euroscience Open Forum, Trieste. |
| October 25th, 2016 | *Optimal design and operation of water distribution networks*, International Symposium on Water and Wastewater Management, Malatya, Turkey. |
| September 7th, 2015 | *Pressure management, leakage reduction and energy savings in water distribution networks*, National University of Architecture and Construction of Armenia (NUACA), Yerevan, Armenia. |
| April 19th, 2015 | *Water distribution networks: pressure management for energy savings and hydroelectric production*, BIT's 4th Annual World Congress of Emerging Infotech-2015, Shenzhen, China. |
| June 20th, 2014 | *Efficient decrease of water loss and energy consumption in smart distribution networks*, BIT's 3rd Annual World Conference of Emerging Infotech-2014, Dalian, China. |
| November 6th, 2013 | *Water and energy savings in smart distribution systems*, BIT's 1st Int. Conf. of Emerging Industry-2013, Shenzhen, China. |
| November 20th, 2012 | *Efficient decrease in the loss in water supply systems*, Water System Management Section, Environmental Summit, Ljubljana, Slovenia. |

## Teaching

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| Since Academic year 2020-2021 | Course of Hydraulic Structures II, Second Level degree in Civil Engineering, and Second Level degree in Environmental, Territory and Civil Protection Engineering, University of Udine. |
| Academic year 2021-2022 | Course of Hydraulic Structures within the Integrated Urban Planning Laboratory (LIPU), Second Level degree in Architecture, University of Udine. |
| From academic year 2009-2010 to academic year 2019-2020 | Courses of Hydraulic Structures I and II, Second Level degree in Civil Engineering, University of Udine. |
| From academic year 2004-2005 to academic year 2007-2008 | Module course: *Hydraulic structures* - First level degree in Environmental engineering, University of Udine. |
| From academic year 2003-2004 to academic year 2012-2013 | Module course: *Modeling and control of free surface and pressurized water networks*. Second level Master in Management and Industrial Treatment of Waters, Sponsored by Universities of Verona, Padova, Venezia, Trieste. |
| Academic year 2000-2001 | Module course: *Modeling pollution and sediment transport in fluvial and coastal waters*. Second level Master in Environment Management and Control, Superior School S. Anna, Pisa. |
| Academic year 1999-2000 | Module course: *Advanced models of transport processes in coastal waters*. Second level Master in Environment Management and Control, Superior School S. Anna, Pisa. |

## Publications

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| F. Spizzo, G. Venaruzzo, M. Nicolini, D. Goi (2023) | Water Distribution Network Partitioning Based on Complex Network Theory: The Udine Case Study. *Water*, Vol. 15, 1621, 1-20. |
| M. Nicolini (2021) | Fractal Dimension of Braided Rivers from Detailed Two-Dimensional Hydrodynamic Simulations, in *Proceedings of CHAOS 2020 (13th Chaotic Modeling and Simulation)*, K.H. Skiadas, Y. Dimotikalis Eds, Springer Proceedings in Complexity. |
| M. Nicolini (2020) | Complex Networks Theory for Evaluating Scaling Laws and WDS Vulnerability for Potential Contamination Events. *Water*, Vol. 12, 1296, 1-14. |
| R. Perin, M. Trigatti,, M. Nicolini, M. Campolo, D. Goi (2020) | Automated Calibration of the EPA-SWMM Model for a Small Suburban Catchment Using PEST: A Case Study. *Environmental Monitoring and Assessment*, Vol. 192(6). |
| M. Nicolini, L. Falcomer (2020) | Application of a Genetic Algorithm for Model Calibration and Leakage Identification in Water Distribution Systems. *Proceedings of the 3rd IEEE International Conference on Knowledge Innovation and Invention (ICKII 2020)*, Taiwan, 21-23 agosto, 273-276. |
| M. Nicolini (2019) | Localization of emerging leakages in water distribution systems: a complex networks approach. *Advances in Science, Technology and Engineering Systems Journal*, Vol. 4(4), 276-284. |
| M. Nicolini (2019) | Scaling laws of potentially contaminated nodes in water distribution systems: a complex network approach. *Proceedings of the 7th International Conference on Environmental Management, Engineering, Planning and Economics (CEMEPE 2019)*, Mykonos Island, Greece, 19-24 giugno. ISBN 978-618-5271-73-2. |

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| M. Nicolini (2018) | Leakage identificaion in water distribution systems with a complex network approach. *Proceedings of the 1st IEEE International Conference on Knowledge Innovation and Invention (ICKII 2018)*, Jeju Island, South Korea, 23-27 luglio, 58-61. ISBN: 978-1-5386-5267-1. |
| M. Trigatti, R. Perin, M. Nicolini, D. Goi (2016) | Stormwater quantity and quality for sustainable management of runoff in an industrial district. Preliminary analysis and modelling of first foul flush effect. *Journal of Multidisciplinary Engineering Science and Technology*, Vol. 3(7), 5249-5255. |
| M. Trigatti, R. Perin, M. Nicolini, D. Goi (2016) | Infiltration ponds in small urban catchments: stormwater modeling and sediment contamination assessment. *DPCM 2016, IWA Regional Conference on Diffuse Pollution and Catchment Management*, Dublin (Ireland), 23-27 October. |
| M. Trigatti, R. Perin, M. Nicolini, D. Goi (2016) | Using EPA-SWMM in quality stormwater modeling: calibration and design strategies. *SIDISA 2016, 10th International Symposium on Sanitary and Environmental Engineering*, Rome, 19-23 June. |
| M. Trigatti, R. Perin, M. Nicolini, D. Goi (2015) | Quality stormwater modeling in small suburban catchments: a case study. *International Conference on Sustainable Water Management*, Murdoch University, Western Australia, 29 Nov.-3 Dic. |
| M. Nicolini et al. (2014) | Numerical modeling and leakage reduction in the water distribution system of Udine. *Procedia Engineering*, 1241-1250. |
| P. Bertola, G. Silvagni, M. Nicolini, F. Volpi (2014) | A criterion for optimal management of water distribution networks. *Urban Water 2014, 2nd International Conference on the Design, Construction, Maintenance, Monitoring and Control of Urban Water Systems*, The Algarve (Portugal), 27-29 May. |
| C. Giacomello, Z. Kapelan, M. Nicolini (2013) | Fast hybrid optimization method for effective pump scheduling. *J. Water Res. Plann. Manage.*, ASCE, Vol. 139(2). |
| M. Nicolini (2012) | Pareto genetic algorithms for multi-objective design of water distribution systems. *Applied Mechanics and Materials: Advances in Hydrology and Hydraulic Engineering*, Vol. 212-213. |
| M. Nicolini (2012) | Genetic algorithms for the optimal operation of sprinkle irrigation systems under deterministic loading conditions. *International Journal of Modeling and Optimization*, Vol. 2(2). |
| M. Nicolini (2012) | Genetic algorithms for optimal management of sprinkle irrigation systems. *International Conference on System Modeling and Optimization*, Hong-Kong (China), 17-18 February. |
| M. Nicolini (2011) | A methodology for monitoring and leakage reduction in water distribution systems. *Water Utility Journal*, Vol. 2. |
| M. Nicolini, C. Giacomello, K. Deb (2011) | Case study: calibration and optimal leakage management for a real water distribution network. *Journal of Water Resources, Planning and Management*, ASCE, Vol. 137(1). |
| M. Nicolini (2011) | A methodology for monitoring and leakage reduction in water distribution systems. *Fourth International Conference on Water Loss Reduction in Water Supply Systems*, Sofia (Bulgaria), 14-15 November. |
| M. Nicolini (2011) | Water and energy savings in water distribution systems with real time monitoring. *Computing and Control for the Water Industry - CCWI 2011: Urban Water Management - Challenges and Opportunities*, Exeter (UK), 5-7 September, vol. 2, 467-472. |
| M. Nicolini (2011) | Optimal pressure management in water networks: increased efficiency and reduced energy costs. *Defence, Science and Research Conference - DSR 2011*, Singapore, 3-5 August. |
| M. Nicolini, A. Patriarca (2011) | Model calibration and system simulation from real time monitoring of water distribution networks. *3rd International Conference on Computer Research and Development*, Shangai (China), 11-13 March, 51-55. |

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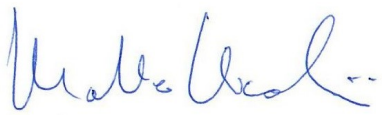
| C. Giacomello, M. Nicolini, Z. Kapelan (2010) | Linear programming applied to real-time pump operation scheduling. *Proceedings of the 9th International Conference on Hydroinformatics*, Tianjin (China), 7-10 September, vol. 3, 2342-2349. |
| M. Nicolini, L. Zovatto (2009) | Optimal location and control of pressure reducing valve in water networks. *Journal of Water Resources, Planning and Management*, ASCE, Vol. 135(3). |
| P. Bertola, M. Nicolini (2007) | Evaluating reliability and efficiency of water distribution networks. In: P. Bertola and M. Franchini (Eds.) *Management of Water Networks.*, Franco Angeli, 7-23. |
| L. Zovatto, M. Nicolini (2007) | Improving the convergence order of the meshless approach for the cell method for numerical integration of discrete conservation laws. *Journal for Computational Methods in Engineering Science and Mechanics*, vol. 8(5), 273-282. |
| M. Nicolini, V. Fiorotto, E. Caroni (2007) | Concentration statistics for non-ergodic transport with finite Peclet values in porous heterogeneous formations. *IAHR 2007*, Venezia, 2-6 July. |
| L. Zovatto, M. Nicolini (2006) | Extension of the meshless approach for the cell method to three-dimensional numerical integration of discrete conservation laws. *Journal for Computational Methods in Engineering Science and Mechanics*, vol. 7(2), 69-79. |
| M. Nicolini, V. Fiorotto, E. Caroni (2006) | Analysis of concentration under non-ergodic transport as sampled in natural aquifers. *CMWR XVI - Computational Methods in Water Resources*, Copenhagen (Danimarca), 19-22 June. |
| M. Nicolini (2005) | A Two-Level Evolutionary Approach to Multi-Criterion Optimization of Water Supply Systems. In: Lecture Notes in Computer Science, LNCS n. 3410, Springer-Verlag (2005). |
| M. Nicolini (2004) | Evaluating performance of multi-objective genetic algorithms for water distribution system optimization. *Proceedings of the 6th International Conference on Hydroinformatics*, Singapore, 21-24 June, vol. 1, 850-867. |
| L. Zovatto, M. Nicolini (2003) | The Meshless approach for the Cell Method: A New Way for the Numerical Solution of Discrete Conservation Laws. *Journal of Computational Engineering Science*, vol. 4(4), 869-880. |

Udine, May 30th, 2023



Dr. Ing. Matteo Nicolini