Prof. Caterina May PhD

Curriculum vitae

Researcher unique identifier: https://orcid.org/0000-0002-0608-0238

Current Position

Associate Professor of Statistics at University of Eastern Piedmont, SSD SECS-S/01.

Education and Qualifications

2014: Awarded with the Italian *National Scientific Qualification* of Associate Professor of Statistics (SC 13/D1).

January 2007: PhD in Mathematics, Department of Mathematics, University of Milan (Italy).
Supervisor: Prof. Piercesare Secchi (Politecnico di Milano).
Specialization: Probability and Statistics.

April 2002: Master's Degree in Mathematics, University of Milan, with a final grade of 110/110.

University Career

2018 -	*Associate Professor* of Statistics, University of Eastern Piedmont, Department of Studies for Economics and Business (DISEI), Novara (Italy)
2011 - 2017	*Assistant Professor*, University of Eastern Piedmont, SSD SECS-S/01 Statistics
2006 - 2010	*Research Fellow*, University of Eastern Piedmont, under the supervision of Prof. Aldo Goia
2002 - 2006	*PhD Scholarship*, Department of Mathematics, University of Milan (Italy)

Honours and Prizes

2024: Winner of the 5th edition of the Spanish Society of Statistics and Operations Research – BBVA Foundation Awards for the Best Applied Contribution in Statistics. Awarded paper: *Designing experiments for estimating an appropriate outlet size for a silo type problem,* published in *Annals of Applied Statistics,* co-authored with J. Fidalgo and A. Moler.

2002: Awarded with the *Scholarship for the Training of the Most Promising Young People*, University of Milan

Grants

PRIN 2022 – Optimal and Adaptive Designs for Modern Medical Experimentation (PRIN 2022TRB44L)
Member of the research unit funded by the Italian Ministry of University and Research under the national programme *Progetti di Rilevante Interesse Nazionale (PRIN)*. The project focuses on developing innovative statistical methodologies for the design and analysis of modern medical experiments.

FFABR (Fund for the Financing of Basic Research Activities) – Università del Piemonte Orientale, Italy, 2017. Awarded competitive national funding by the Italian Ministry of University and Research to support independent research activities.

Scientific Publications

1. Journal Articles

1. G. Aletti, N. Flournoy, C. May, C. Tommasi (2025). Maximum Likelihood Estimation under the Emax Model: Existence, Geometry and Efficiency. STATISTICAL PAPERS 66, 106. https://doi.org/10.1007/s00362-025-01673-2
2. Gambaro, A. M., Fusai, G., Sodhi, ManMohan S., May, C., & Morelli, C. (2023). ICU capacity expansion under uncertainty in the early stages of a pandemic. PRODUCTION AND OPERATION MANAGEMENT. 32(8), pp. 2455-2474. doi: 10.1111/poms.13985
3. J. Fidalgo, C. May, J. Moler (2023). Designing experiments for estimating an appropriate outlet size for a silo type problem. ANNALS OF APPLIED STATISTICS Vol. 17, No. 1, 606–620 https://doi.org/10.1214/22-AOAS1644
4. N. Flournoy, C. May, C. Tommasi (2021). The Effects of Adaptation on Maximum Likelihood Inference for Non-Linear Models with Normal Errors. JOURNAL OF STATISTICAL PLANNING AND INFERENCE. Vol. 214, Pages 139-150, ISSN 0378-3758, https://doi.org/10.1016/j.jspi.2021.02.002 DOI: 10.1016/j.jspi.2021.02.002.
5. Aletti G., May C., Tommasi C. (2016). Best Estimation of Functional Linear Models. JOURNAL OF MULTIVARIATE ANALYSIS, vol. 151, p. 54-68. DOI: 10.1016/j.jmva.2016.07.005
6. Aletti G., May C., Tommasi C. (2014). KL-optimum designs: theoretical properties and practical computation. STATISTICS AND COMPUTING, (2014-09-24): 1-11, Print ISSN: 0960-3174, Online ISSN: 1573-137. DOI: 10.1007/s11222-014-9515-8
7. May C. and Tommasi C. (2014). Model selection and parameter estimation in non-linear nested models: a sequential generalized DKL-optimum design. STATISTICA SINICA, vol. 24, p. 63-82, DOI:10.5705/ss.2012.258.
8. G. Aletti, C. May, P. Secchi (2012). A Functional Equation Whose Unknown is P([0,1]) Valued. JOURNAL OF THEORETICAL PROBABILITY, vol. 25(4), pages 1207-1232. DOI: 10.1007/s10959-011-0399-7
9. Flournoy N., May C. and Secchi P. (2012). Asymptotically optimal response-adaptive designs for allocating the best treatment: an overview. INTERNATIONAL STATISTICAL REVIEW, 80 (2), 293-305. DOI: 10.1111/j.1751-5823.2011.00173.x

10. Fusai, G., Goia, A. and May, C. (2010). Functional clustering and linear regression for peak load forecasting. INTERNATIONAL JOURNAL OF FORECASTING, vol. 26, p. 700-711, ISSN: 0169-2070, DOI:10.1016/j.ijforecast.2009.05.015
11. May, C. and Flournoy, N. (2009). Asymptotics in response-adaptive designs generated by a two-color, randomly reinforced urn. THE ANNALS OF STATISTICS, 37(2), 1058-1078. DOI: 10.1214/08-AOS596
12. G. Aletti, C. May, P. Secchi (2009). A central limit theorem, and related results, for a two-color randomly reinforced urn. ADVANCES IN APPLIED PROBABILITY, vol. 41(3), p. 829-844. DOI: 10.1239/aap/1253281065
13. G. Aletti, C. May, P. Secchi (2007). On the distribution of the limit proportion for a two-color, randomly reinforced urn with equal reinforcement distributions. ADVANCES IN APPLIED PROBABILITY, vol. 39(3), p. 690-707. DOI: 10.1239/aap/1189518634
14. May C., Paganoni A. M. and Secchi P. (2005). On a two-color generalized Polya urn. METRON. Vol LXIII, n.1, 115-134. ISSN: 0026-1424

2. Book Articles

15. May, C., Ladas, T., Pigoli, D., Mylona, K. (2025). A-optimal Designs of Experiments in Linear Models with Dynamic Factors and Functional Responses. In: Aneiros, G., Bongiorno, E.G., Goia, A., Hušková, M. (eds) New Trends in Functional Statistics and Related Fields. IWFOS 2025. Contributions to Statistics. Springer, Cham. ISBN 978-3-031-92382-1 https://doi.org/10.1007/978-3-031-92383-8_46
16. G. Aletti, C. May, C. Tommasi (2024). *On the Maximum Likelihood Estimator of the Emax model*. In: Methodological and Applied Statistics and Demography I, SIS 2024, Short Papers, Plenary and Specialized Sessions, Springer. eBook ISBN 978-3-031-64346-0
17. C. May, C. Tommasi (2022). *Bias correction of the maximum likelihood estimator for Emax model at the interim analysis*. In: SIS 2022 Book of the Short Papers, Pearson, pag 1972-1977. ISBN 9788891932310.
18. C. May, C. Tommasi (2020). *On the behaviour of the maximum likelihood estimator for exponential models under a fixed and a two-stage design*. In: Book of Short Paper SIS 2020, Pearson, pag 1302-1307. ISBN 9788891910776.
19. G. Aletti, C. May, C. Tommasi (2016). *On applying optimal design of experiments when functional observations occur*. In: mODa 11 - Advances in Model-Oriented Design and Analysis. Editors: Kunert, Joachim, Müller, Christine H., Atkinson, Anthony C. Publisher: Springer, 2016, pp 1-9. eBook ISBN 978-3-319-31266-8. Softcover ISBN: 978-3-319-31264-4. DOI: 10.1007/978-3-319-31266-8.
20. Aletti G., May C., Tommasi C (2014*). Optimal designs for linear models with functional responses*. In: (a cura di): E. G. Bongiorno, E. Salinelli, A. Goia, and P. Vieu, Contributions in Infinite-Dimensional Statistics and Related Topics, p. 19-24, Società Editrice Esculapio, ISBN: 9788874887637
21. Aletti G., May C. and Tommasi C. (2013). *A Convergent Algorithm for Finding KL-Optimum Designs and Related Properties*. In: mODa 10 – Advances in Model-Oriented Design and Analysis / D. Ucinski, A.C. Atkinson, M. Patan.: Contributions to Statistics, Springer, 2013, pp 1-9. ISBN 978-3-319-00217-0. DOI: 10.1007/978-3-319-00218-7_1
22. Flourony N., May C., Moler J. A., Plo F. (2010). *On testing hypotheses in response-adaptive designs targeting the best treatment*. In: mODa 9 -Advances in Model-Oriented Design and Analysis. p. 81-88, BERLIN HEIDELBERG:Physica-Verlag (Springer Company), ISBN: 978-3-7908-2409-4, DOI: 10.1007/978-3-7908-2410-0

23. Tommasi, C., and May, C. (2010). *An adaptive sequential design for model discrimination and parameter estimation in non-linear nested models*. ICNAAM 2010: International Conference of Numerical Analysis and Applied Mathematics 2010. AIP Conference Proceedings, Vol. 1281, pp. 1917-1920. ISBN: 978-0-7354-0836-4, ISSN: 0094-243X, doi:10.1063/1.3498294

3. Books

24. Atkinson, A.C., Giovagnoli, A., Torsney, B., and May, C. (EDITORS) (2010). mODa 9 – Advances in Model-Oriented Design and Analysis. Contributions to Statistics, Physica-Verlag/Springer, Heidelberg.doi: 10.1007/978-3-7908-2410-0.

4. Conference Publications

25. May C., Ladas T., Mylona K. and Pigoli D. *Design of experiments for function-on-function linear models*. Book of Abstracts PROBASTAT 2024, The Eighth International Conference on Mathematical Statistics, May 20 - 24 2024, Smolenice Castle, Slovak Republic. https://www.um.sav.sk/probastat2024/doc/Abstracts.pdf
26. Gambaro, A. M.; Fusai, G.; May, C.; Morelli, C.; Sodhi, M. (2021). *We're not winning this battle. The COVID toll for limited ICU capacity*. CONFERENCE PROGRAM BOOK Capacity Expansion under Stochastic Demand: Managing ICU Capacity in a Pandemic. Production and Operations Management Society (POMS) Conference.
27. Coad S., May C. and Flournoy N. (2013). *A Further Study of the Randomized Play-the-Leader Design*. Seventh International Workshop on Simulation, Book of Abstracts, "Quaderni di Dipartimento" of the Department of Statistical Sciences of the University of Bologna, n. 3, 2013, ISSN 1973-9346.
28. May C. and Tommasi C. (2012). *A sequential generalized DKL-optimum design for model selection and parameter estimation in non-linear nested models*. International Conference on Trends and Perspectives in Linear Statistical Inference and 21st International Workshop on Matrices and Statistics, Book of Abstracts. Editors: Katarzyna Filipiak and Martin Singul. ISBN: 978-83-63400-12-5.
29. May, C., Paganoni A. M. and Secchi P. (2007). *Response-adaptive designs targeting the best treatment for clinical trials with continuous responses*. S.Co.2007 Fifth Conference - Complex Models and Computationally intensive methods for estimation and prediction - Book of short papers, 326-331, Cluep. ISBN: 9788861291140
30. Goia A, May C. (2008). *A Functional Approach to Peak Load Forecasting*. In: SIS - atti XLIV Riunione Scientifica.
31. May C., Paganoni A.M., Secchi P (2008). *Asymptotic Test for Comparing Mean Responses to Treatment After Allocation With a RRU-Design*. In: SIS - atti XLIV Riunione Scientifica.

5. Preprints

32. May, C., Ladas, T., Mylona, K. and Pigoli, D. (2024). *Optimal design of experiments for functional linear models with dynamic factors*. ArXiv preprint, Under revision for publication. https://doi.org/10.48550/arXiv.2412.14284.

6. Work in progress

33. May, C., Ladas, T., Mylona, K. and Pigoli, D. (2025). *Penalized estimation and optimal design of experiments for a function-on-function linear model.* In preparation.

Teaching Experience

1. PhD Programs

A.Y. 2024-2025. LTCC course in *Design of Experiments (Module IV* on *Advanced topics),* King's College London (UK).
A.Y. 2016-2017, 2015-2016, 2014-2015: Lecturer in *Statistical Inference - Module II* (in English) for PhD course in *Statistics and Mathematics for Finance*, University of Milan Bicocca.
A.Y. 2010-2011: Lecturer in *Probability* (in English) for *Ph.D.* in *Economics and Finance*, University Luigi Bocconi.
A.Y. 2009-2010, 2008-2009: Lecturer in *Statistics* (in English) for *Ph.D.* in *Economics, Finance and Management*, University Luigi Bocconi.

2. Master's Degree

A.Y. 2024-25: Lecturer in *Design of Experiments* - I Module, Mathematics MSc and BSc, King's College London.
A.Y. 2022-23, 2021-22, 2020-21, 2019-20, 2018-19, 2017-18: Lecturer in *HR Analytics*, Master's degree in Management and Finance, Human Resources curriculum, University of Eastern Piedmont.
A.Y. 2018-19, 2017-18, 2016-2017, 2015-2016, 2014-2015, 2013-2014, 2012-2013, 2011-2012: Lecturer in *Statistical Methods for Business*, Master's degree in Administration, Control and Profession, University of Eastern Piedmont.
A.Y. 2015-2016: Lecturer in *Quantitative Methods II*, Master's degree in Management and Finance, University of Eastern Piedmont.
A.Y. 2012-2013: Lecturer in *Data Collection and Analysis Techniques* for Master of Planning and Management of Cultural Systems, University of Eastern Piedmont.

3. Bachelor's Degree

A.Y. 2024-25: Lecturer in *Design of Experiments* - I Module, Mathematics MSc and BSc, King's College London.
A.Y. 2016-2017, 2015-2016, 2014-2015, 2013-2014: Lecturer in *Statistics,* degree in Business and Economics, University of Eastern Piedmont.
A.Y.2022-23, 2021-22, 2020-21, 2019-20, 2017-18: Lecturer in *Statistics for Tourism*, University of Eastern Piedmont.
A.Y. 2012-2013, 2011-2012: Lecturer in *Applied Statistics,* degree in Business and Economics, University of Eastern Piedmont.
A.Y. 2010-2011: Lecturer in *Financial and Economic Data Analysis,* degree in Business and Economics, University of Eastern Piedmont.
A.Y. 2006-2007: Lecturer in *Mathematical Statistics with R*, Mechanical and Aerospace Engineering, Polytechnic University of Milan.

A.Y. 2004-2005, 2003-2004, 2002-2003: Lecturer in *Probability and Mathematical Statistics*, Engineering, Polytechnic University of Milan.

International Scientific Collaborations

2025-	*Visiting Research Fellow* in the Department of Mathematics, Faculty of Natural, Mathematics and Engineering Sciences at King's College London.
2023-2025	*Research Associate* for 17 months in the Department of Mathematics, Faculty of Natural, Mathematics and Engineering Sciences at King's College London. Project: *Multi-objective optimal design of experiments*, Grant EPSRC EP/T021624/1, Principal Investigator Prof. Steven Gilmour.
2023	Invited *Visiting Fellow* at King's College London (U.K.), one week
2019	Invited *Visiting Scholar* at *Universidad Pública de Navarra* (Pamplona, Spagna), one month
2011	Invited to the program *Design and Analysis of Experiments* at Isaac Newton Institute for Mathematical Sciences (Cambridge, U.K.), two months
2009	Invited *Visiting Scholar* at *Universidad Pública de Navarra* (Pamplona, Spagna), two weeks
2007-	Invited fellow at the international congresses *Model-Oriented Data Analysis and Optimum Design* (*MoDA Conference*), every three years
2006	*Visiting Scholar* at *University of Missouri* (USA), five months

Organization of conferences

Organiser of an invited session titled *Functional data analysis and stochastic processes* at the *CFE-CMStatistics Conference*, London, 14-16 December 2024.

Organiser of an invited session *Contributions to functional data analysis* at the *Eighth International Workshop on Simulation*, Vienna, 21-25 September 2015.

Member of the Organizing Committee of the international congress *Model-Oriented Data Analysis and Optimum Design* (*MODA9 Conference*), 14-19 June 2010.

Administrative experience

2011 - 2023	Member of the International Relations Committee at the Department DiSEI, University of Eastern Piedmont.

2020 - 2023	Erasmus Coordinator at the Department DiSEI, University of Eastern Piedmont.
2017 - 2021	Member of Quality Assurance commission for a Master's degree, University of Eastern Piedmont.

Public engagement and Collaboration with Industrial Partners

2024: Winner of the King's College London "Travelling science" funding to organise a scientific public event in an external venue, together with Kalliopi Mylona and Peter Jossen. Event entitled *Design of Experiments and Tartini Tones* organised at Kings Place, July 2024.

2022: Statistical talks with Deloitte Consulting management and employees.

2023, 2018: Meetings with middle and high schools teachers and students about *Statistics* and *Mathematics*.

2014-15: scientific consulting for the *Interdisciplinary Research Center on Mathematical Modeling, Statistical Analysis and Computational Simulation for Scientific and Technological Innovation* (ADAMSS), based at the Faculty of Mathematical, Physical and Natural Sciences at the University of Milan.

Peer review activities and Other

Reviewer for several journals including *Statistics in Medicine*, *JASA*, *Statistical Methods and Applications, Statistical Papers, Biometrics, Scandinavian Journal of Statistics*, *Computational Statistics and Data Analysis*.

Member of the *Italian Statistical Society* (SIS), and of the *Royal Statistical Society.*

Member of several academic competition committees.

Languages

English: Proficient (excellent in spoken, written, and reading comprehension).
Italian: Mother tongue.

Further information

Musician: cellist. Regular performer and experienced teacher. Musical CV available on request.