Professor Huseyin Merdan   *Curriculum Vitae*

TOBB University of Economics and Technology	E-mail: merdan@etu.edu.tr
Faculty of Science and Letters	Phone: +90 312 2924141 (Office)
Department of Mathematics	+90 535 9366727 (Cell)
Sögütözü Cad, No 43	Fax : +90 312 2924021
06560-Sögütözü, Ankara	URL: http://merdan.etu.edu.tr
TURKEY	

DEGREES OBTAINED

Ph.D.   University of Pittsburgh, Department of Mathematics, USA, 2004

M.A.   Indiana University at Bloomington, Department of Mathematics, USA, 1998

B.Sc.   Ankara University, Department of Mathematics, Turkey, 1993

MAIN RESEARCH INTEREST

Dynamical Systems, Mathematical Biology, Financial Mathematics

(More specifically, stability and bifurcation analyses; mathematical modeling and numerical simulations in both Mathematical Biology and Mathematical Finance; nonlinear phenomena; phase transitions and interface problems.)

PUBLICATIONS

Books

- **H. Merdan**, Renormalization Group Methods in Applied Mathematical Problems: Decay of Solutions and Interface Problems, Lambert Academic Publishing, 2011.
- A.C.J. Luo and **H. Merdan** (editors), Mathematical Modelling and Applications in Nonlinear Dynamics, Springer, 2016.

Book Chapters

- **H. Merdan** and S. Kayan**,** Delay Effects on the Dynamics of the Lengyel–Epstein Reaction Diffusion Model, Chapter 6, Mathematical Modelling and Applications in Nonlinear Dynamics, Springer, 2016.

Ph.D. Thesis

1. **H. Merdan**, *Renormalization Group Methods in Applied Mathematical Problems,* Ph.D. Thesis, University of Pittsburgh, Pittsburgh, Pennsylvania, USA, **(2004)**.

Refereed Journal Papers

1. S. Yildiz, S. Bilazeroglu and **H. Merdan**, Stability and bifurcation analyses of a discrete Lotka-Volterra type predator-prey system with refuge effect, **Journal of Computational and Applied Mathematics**, Volume 422, Article Number 114910, **(2023).**

2. **H. Merdan**, S. Bilazeroglu and L. Guerrini, Hopf bifurcation analysis of Lengyel-Epstein model involving two discrete delays, **Discrete and Continuous Dynamical Systems-S**, Volume 1, Issue 3, Page: 535-554, **(2022).**

3. S. Bilazeroglu and **H. Merdan**, Hopf bifurcations in a class of reaction-diffusion equations including two discrete time delays: An algorithm for determining Hopf bifurcation, and its applications, **Chaos, Solitons & Fractals**, Volume 142, 1 Article Number 110391, **(2021)**.

4. P. Baydemir, **H. Merdan**, E. Karaoglu and G. Sucu, Complex dynamics of a discrete-time prey-predator system with Leslie type: Stability, bifurcation analyses and chaos, **International Journal of Bifurcation and Chaos**, Volume 30, Issue 10, Article Number 2050149, **(2020)**.

5. G. Karahisarli, **H. Merdan**, A. Tridane, Stability and Zero-Hopf bifurcation analysis of a tumour and T-Helper cells interaction model in the case of HIV infection, **Miskolc Mathematical Notes**, 21(2) 911-937, **(2020)**

6. H. Bulut, **H. Merdan** and D. Swigon, Asset Price Dynamics for a Two-Asset Market System, **CHAOS**, Volume 29, Issue 2, Article Number 023114, **(2019)**.

7. **H. Merdan**, O. Ak Gumus and G. Karahisarli, Global Stability Analysis of a General Scalar Difference Equation, **Discontinuity, Nonlinearity, and Complexity**, 7(3), 225-232, **(2018)**.

8. S. Kayan and **H. Merdan**, An algorithm for Hopf bifurcation analysis of a delayed reaction-diffusion model, **Nonlinear Dynamics**, Volume 89, Issue 1, 345-366, **(2017)**.

9. S. Kayan, **H. Merdan**, R. Yafia and S. Goktepe, Bifurcation analysis of a modified tumor-immune system interaction model involving time delay**, Mathematical Modeling of Natural Phenomena**, 12 (5), 120-145, **(2017)**.

10. E. Karaoglu, E. Yilmaz and **H. Merdan**, Hopf bifurcation analysis of coupled two-neuron system with discrete and distributed delays, **Nonlinear Dynamics**, Volume 85, Issue 2, 1039-1051, **(2016)**.

11. E. Karaoglu, E. Yilmaz and **H. Merdan**, Stability and bifurcation analysis of two-neuron network with discrete and distributed delays, **Neurocomputing**, Volume 182, 102-110, **(2016)**.

12. **H. Merdan**, G. Caginalp and W.C. Troy, Bifurcation analysis of a single-group asset flow model, **Quarterly of Applied Mathematics**, Volume 74, Issue 2, 275-296, **(2016)**.

13. R. Yafia, M.A. Aziz-Alaoui, **H. Merdan** and J.J. Tewa, Bifurcation and stability in a delayed predator-prey model with mixed functional responses, **International Journal of Bifurcation and Chaos**, Volume 25, Issue 7, Article Number 1540014, **(2015)**.

14. **H. Merdan** and S. Kayan, Hopf bifurcation in Lengyel-Epstein reaction-diffusion model with discrete time delay, **Nonlinear Dynamics**, Volume 79, Issue 3, 1757-1770, **(2015)**.

15. E. Karaoglu and **H. Merdan**, Hopf bifurcations of a ratio-dependent predator-prey model involving two discrete maturation time delays, **Chaos Solitons & Fractals**, Volume 68, 159-168, **(2014)**.

16. E. Karaoglu and **H. Merdan**, Hopf bifurcation analysis for a ratio-dependent predator-prey system involving two delays, **ANZIAM Journal**, Volume 55, Issue 3, 214-231, **(2014)**.

17. C. Celik and **H. Merdan**, Hopf bifurcation analysis of a system of coupled delayed-differential equations, **Applied Mathematics and Computation**, Volume 219, Issue 12, 6605-6617, **(2013)**.

18. H Akkocaoglu, **H. Merdan** and C. Celik, Hopf bifurcation analysis of a general non-linear differential equation with delay, **Journal of Computational and Applied Mathematics**, Volume 237, Issue 1, 565-575, **(2013)**.

19. **H. Merdan** and O. Ak Gumus, Stability analysis of a general discrete-time population model involving delay with Allee effects, **Applied Mathematics and Computation**, Volume 219, Issue 4, 1821-1832, **(2012)**.

20. **H. Merdan** and H. Cakmak, Liquidity effect on the asset price forecasting, **Journal of Nonlinear Systems and Applications**, Volume 3, Number 2, 82-87, **(2012)**.

21. **H. Merdan** and E. Karaoglu, Impact of Allee Effects on Stability Analysis of the Population Model $X_{t+1} = \alpha X_t f(X_{t-3})$, **Hacettepe Journal of Mathematics and Statistics**, Volume 41, Issue 5, 751-765, **(2012)**.

22. **H. Merdan** and M. Alisen, A mathematical model for asset pricing**, Applied Mathematics and Computation**, 218, 1449-1456, **(2011)**.

23. **H. Merdan**, Stability analysis of a Lotka-Volterra type predator-prey system involving Allee effects. **ANZIAM Journal**. 52, 139–145, **(2010)**.

24. O. Duman and **H. Merdan**, Stability analysis of continuous population model involving predation and Allee effect, **Chaos Solitons & Fractals**, 41, 1218–1222, **(2009)**.

25. **H. Merdan** and O. Duman, On the Stability Analysis of a General Discrete-Time Population Model Involving Predation and Allee Effects, **Chaos Solitons & Fractals**, 40, 1169–1175, **(2009)**.

26. **H. Merdan**, O. Duman, O. Akin and C. Celik, Allee Effects on Population Dynamics in Continuous (Overlapping) Case, **Chaos & Solitons Fractals**, 39, 1994–2001, **(2009)**.

27. C. Celik, **H. Merdan**, O. Duman and O. Akin, Allee Effect on Population Dynamics with Delay, **Chaos Solitons & Fractals**, 37, 65-74, **(2008)**.

28. G. Caginalp and **H. Merdan**, Assets Price Dynamics with Heterogeneous Groups, **Physica D-Nonlinear Phenomena**, Volume 225, Issue 1, 43-54, **(2007)**.

29. **H. Merdan** and G. Caginalp, Renormalization and Scaling Methods for Quasi-Static Interface Problems, **Nonlinear Analysis-Theory and Methods**, Volume 63, Issues 5-7, 812-822, **(2005)**.

30. G. Caginalp and **H. Merdan**, The Transition Between Quasi-static and Fully Dynamic for Interfaces, **Physica D-Nonlinear Phenomena**, Volume 198, Issues 1-2, 136-147, **(2004)**.

31. **H. Merdan** and G. Caginalp, Renormalization Group Methods for Nonlinear Parabolic Equations. **Applied Mathematics Letters**, Volume 17, Issue 2, 217-223, **(2004)**.

32. **H. Merdan** and G. Caginalp, Decay of Solutions to Nonlinear Parabolic Equations: Renormalization and Rigorous Results, **Discrete and Continuous Dynamical Systems-Series B**, Volume 3, Number 4, 565-588, **(2003)**.

33. G. Caginalp and **H. Merdan**, Renormalization Methods and Interface Problems, **Proceedings of the Conference on Computational Modeling of Free and Moving Boundary Problems**, Santa Fe, NM, pp 149-159, **(2003)**.

Preprints

1. P. Baydemir and **H. Merdan**, Global stability analysis of a Leslie type prey-predator system involving refuge and harvesting effects, Preprint.

EMPLOYMENT RECORDS

- 05/14 - present   Full Professor, TOBB University of Economics and Technology, Ankara, Turkey

- 08/13 - 08/14   Visiting Professor, University of Pittsburgh, Pittsburgh, USA

- 10/08 - 05/14   Assoc. Professor, TOBB University of Econ. and Technology, Ankara, Turkey

- 08/05 - 10/08   Assist. Professor, TOBB University of Econ. and Technology, Ankara, Turkey

- 08/04 - 08/05   Visiting Assistant Professor, Illinois Institute of Technology, Chicago, USA

- 05/04 - 08/04   Research Associate, University of Pittsburgh, Pittsburgh, USA

- 2000 - 05/04   Graduate Teaching Fellowship, University of Pittsburgh, Pittsburgh, USA

- 1999 - 2000   Graduate Teaching Assistant, University of Pittsburgh, Pittsburgh, USA

- 1994 - 1995   Graduate Teaching Assistant**,** Ankara University, Ankara, Turkey

ADMINISTRATIVE DUTIES

- 2007 - 2013   Associate Dean of Faculty of Science and Letters, TOBB University of Economics and Technology, Ankara, Turkey

- 2019 – present Scientific Board of TÜBITAK (The Scientific and Technological Research Council of Türkiye)

RESEARCH GRANTS

TÜBITAK (The Scientific and Technological Research Council of Türkiye) Grant – Study on Mathematical Modeling of Asset Pricing

Ph.D./M.Sc. STUDENTS SUPERVISED

Ph. D. Students

1. **Esra Karaoğlu** – *Hopf bifurcation and stability analyses of a neural network model with delay and a predator-prey model with delay*, **Ph.D. Thesis,** (2016)

2. **Şeyma Bilazeroğlu** – *An algorithm for Hopf bifurcation analysis of reaction-diffusion systems with single delay and its applications*, **Ph.D. Thesis,** (2018)

3. **Hatice Bulut** – *Mathematical modeling and stability analyses of financial markets involving two assets and one trading group*, **Ph.D. Thesis,** (2019)

4. **Gamzegül Aydın** – Thesis Topic: *Stability and bifurcation analyses of a tumor and T-helper cells interaction model in the case of HIV infection,* **Ph.D. Thesis,** (2021)

5. **Pınar Baydemir** – Thesis Topic: *Comparison of complex nonlinear dynamics of discrete-time and continuous-time prey-predator models with Leslie type* (expected graduation 2024)

M. Sc. Students

1. **Hatice Çakmak --***Liquidity effects on the asset pricing*, M.Sc. Thesis, (2010)

2. **Meltem Alişen --***Mathematical modeling of the asset price dynamics in the market involving homogenous groups*, M.Sc. Thesis, (2010)

3. **İpek Altıntaş --***Mathematical modeling of the asset price dynamics for heteregenous groups*, M.Sc. Thesis, (2010)

4. **Esra Karaoğlu --***Stability analysis of a general difference equation involving Allee effects*, M.Sc. Thesis, (2011)

5. **Hande Akkocaoğlu --**_Hopf bifurcation analysis of a delayed differential equations_, M.Sc. Thesis, (2011)

6. **Şeyma Bilazeroğlu --**_Hopf bifurcation analysis of Lengyel-Epstein reaction-diffusion model with delay_, M.Sc. Thesis, (2012)

7. **Hande Yücel --**_Stability analysis of a mathematical model for the asset price dynamics_, M.Sc. Thesis, (2013)

8. **Erdem Emin Özban --**_Stochastic modelling of population dynamics_, M.Sc. Thesis, (2013)

9. **Gamzegül Aydın** –_A HIV/AIDS infection model and its stability analysis_, M.Sc. Thesis, (2015)

10. **Gökçe Sucu** –_Stability and bifurcation analysis of a discrete prey-predator system_, M.Sc. Thesis, (2016)

11. **Pınar Baydemir -**-_Stability and Neimark-Sacker bifurcation analyses of a discrete-time predator-prey system with Leslie type_, M.Sc. Thesis, (2018)

TEACHING EXPERIENCE

- **Graduate Courses Taught:** Ordinary differential equations, partial differential equations, numerical analysis, dynamical systems, mathematical biology, financial mathematics, real analysis, mathematical modeling

- **Undergraduate Courses Taught:** Differential equations, numerical analysis, partial differential equations, numerical solutions for ODEs, mathematical biology, financial mathematics, mathematical modeling, advanced calculus, analysis, calculus for engineers and business students, linear algebra

RECOGNITION / AWARDS / FELLOWSHIP

- Excellence in Teaching Award (in recognition of outstanding performance in teaching mathematics), University of Pittsburgh, 2001.

- The Teplitz-Culver Award (awarded to outstanding graduate students in the department of mathematics), University of Pittsburgh, 2001.

- Full National Academic Scholarship for the graduate studies abroad by the Turkish Ministry of Education, 1996-1998.

- Turkish Government Undergraduate Scholarship, 1989-1993.

PROFESSIONAL SOCIETIES

- Member, American Mathematical Society (AMS)

- Member, Society for Industrial and Applied Mathematics (SIAM)

- Member, Turkish Mathematical Society

REFERENCES

- Professor William Troy

  Department of Mathematics, University of Pittsburgh, Pittsburgh, Pennsylvania, USA

  Email: troy@math.pitt.edu

  URL: https://www.mathematics.pitt.edu/people/william-c-troy

- Professor Delfim F. M. Torres

  Department of Mathematics, University of Aveiro, Aveiro, Portugal

  Coordinator of the Center for Research and Development in Mathematics and Applications Email: delfim@ua.pt

  URL: http://orcid.org/0000-0001-8641-2505

- Professor M.A. Aziz-Alaoui

  Applied Mathematics, University of Le Havre, Normandy, France
  Director of the Applied Mathematics Laboratory. (LMAH)

  Email: aziz.alaoui@univ-lehavre.fr

  URL: http://lmah.univ-lehavre.fr/~alaoui/index_ENGLISH.html

- Professor Billur Kaymakçalan

  Department of Mathematics, Çankaya University, Ankara, Turkey

  Email: billur@cankaya.edu.tr ,

  URL: http://www.cankaya.edu.tr/arama/cv_en/Prof.Dr.BillurKAYMAKÇALAN.html