

## CURRICULUM VITAE<sup>1</sup>

<b>Surname:</b>	Tzirtzilakis.
<b>Name:</b>	Efstratios.
<b>Date of birth:</b>	08-04-1974.
<b>Nationality:</b>	Greek.
<b>Marital status:</b>	Married one child.
<b>Military service:</b>	Accomplished (From 7-9-2004 until 7-9-2005).
<b>E-mails:</b>	etzirtzilakis@go.uop.gr, etzirtzilakis@gmail.com
<b>Web page:</b>	<a href="https://etzirtzilakis.uop.gr">https://etzirtzilakis.uop.gr</a>
<b>Current Academic Position:</b>	Professor (full) Department of Mechanical Engineering Government Gazette: C1491-06/07/2021 “Applied Mathematics in Fluid Mechanics”.
<b>Administrative Position:</b>	Vice Rector for Finance and Electronic Governance University of the Peloponnese, Greece.
<b>Web page:</b>	Central University web page  Member of the Fluid Mechanics & Turbomachinery Laboratory Department of Mechanical Engineering, University of the Peloponnese, Greece <a href="http://fluids.mech.uop.gr">http://fluids.mech.uop.gr</a>
<b>Past Positions:</b>	Assistant Professor Department of Mechanical & Water Resources Engineering Technological Educational Institute (TEI) of Western Greece (formerly Technological Educational Institute of Messolonghi). Government Gazette: C38/26.01.10) “Applied Mathematics”. Permanent Assistant Professor at the same institution Government Gazette: C233/27.02.14) “Applied Mathematics”. Associate Professor Department of Mechanical Engineering, TEI of Western Greece, Greece Government Gazette: C90/10.02.16 “Applied Mathematics in Fluid Mechanics”.
<b>Research Interests</b>	Numerical Methods for Solution of Differential Equations, Computational Fluid Mechanics (CFD), Aerodynamics, Biomagnetic Fluid Dynamics (BFD), Ferro-Hydrodynamics (FHD), Magneto-Hydrodynamics (MHD)

<sup>1</sup>Last update: 25/01/2025

## 1 Degrees

1. **Bsc. degree** from the Department of Mathematics of the University of Patras, Greece. (Grade: 7.15/10). Years of study: 1993-1997.
2. **Msc. degree** in Applied Mathematics, from the Department of Mathematics of the University of Patras, Greece. (Grade 9.45/10). Years of study: 1997-1999.
3. **PhD degree** from the Department of Mathematics of the University of Patras, Greece. Received on 07-07-2003. Supervisor: Professor N. Kafoussias.

## 2 Certificates – Foreign Languages – Programming Languages – Computer Knowledge

- English. (First Certificate in English from the University of Cambridge).
- Internal auditor of ISO 9001:2008 (Quality Management Systems) certified by Hellenic Organization of Standardization (ELOT).
- External auditor of ISO 27001:2013 (Information Security Management Systems) certified by TÜV Nord, IRCA No. 17242.
- Experience in Windows operating system.
- Good knowledge of Microsoft Office, Latex2e, Mathematica, Origin, PowerPoint, Dreamweaver, Tecplot, Surfer.
- Good knowledge of the the programming languages FORTRAN (Intel Visual Fortran), C, C++.

## 3 International Editorial activities

- Editor in Chief of the international, open access, scientific journal **New Horizons in Mechanical Engineering** of ISAAC Scientific Publishing from 04/2017-04/2019.

Webpage: <http://www.isaacpub.org/Journal/NHME>.

- Member of the Editorial Board of the international scientific journal **Mathematical Problems in Engineering** of Hindawi Publishing Corporation since 2014. Impact Factor for the journal is 1.082 according to 2013 Journal Citation Reports released by Thomson Reuters in 2014.

Webpage: <http://www.hindawi.com/journals/mpe/>.

- Member of the Editorial Board of the international scientific journal **Mathematics** of MDPI Publishing Corporation since 2021. Impact Factor for the journal is 1.747 according to 2019 Journal Citation Reports released by Thomson Reuters in 2019.

Webpage: <https://www.mdpi.com/journal/mathematics/editors>.

- Guest Editor in Chief of the special issue “Fluid Mechanics Physical Problems and Symmetry” of the international journal **Symmetry**.

## 4 Administrative Positions

1. Vice Rector for Finance and Electronic Governance of the University of the Peloponnese, Greece (02.02.23 – expected 31.08.26).
2. Head of the Mechanical Engineering Department (Academic years<sup>2</sup> 2019–2021).
3. Mechanical Engineering Department Representative at the Research Funds Special Account (Research Committee) T.E.I. of Western Greece (Academic years 2017–2019).
4. Mechanical Engineering Department Deputy Representative at the Research Funds Special Account University of the Peloponnese (Academic years 2019–).
5. Member of the Internal Assessment Team of the Department (Academic Years 2016–2021).
6. Member Member of the Undergraduate Program Committee.
7. Head of the Fluid Mechanics & Turbomachinery Laboratory (Academic Years 2015–2020).  
\*Technological Educational Institute of Messolonghi is merged to Technological Educational Institute of Western Greece after A94/05.06.2013 government gazette.
8. Deputy Head of the Department of Mechanical & Water Resources Engineering, Technological Educational Institute of Western Greece, Greece (Academic years 2013–2015).
9. Director of the Division of Mechanics and Agricultural Engineering, Department of Mechanical & Water Resources Engineering, Technological Educational Institute of Messolonghi, Greece (Academic years 2012–2013).

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<sup>2</sup>Academic year is defined as the period from 01 September to 31 August

10. Deputy Director of the Division of Mechanics and Agricultural Engineering, Department of Mechanical & Water Resources Engineering, Technological Educational Institute of Messolonghi, Greece (Academic year 2011–2012).
11. Coordinator of the Internal Evaluation Committee of the Department of Mechanical & Water Resources Engineering, Technological Educational Institute of Messolonghi, Greece (2010–2011).
12. Head of the Division of Quality Assurance of Laboratory of Educational Material and Methodology (e-Comet lab), Hellenic Open University, Greece (8/05/2008–30/06/2009 and 20/05/2011–31/12/2014).
13. Certified internal auditor of ISO 9001:2008 systems of the Hellenic Organization of Standardization. Internal auditor of ISO 9001:2008 systems of the Hellenic Open University at the Quality and Efficiency Office, which is an administrative unit subject directly to the General Secretary (Head of all administrative divisions) of the University (2012–2014).
14. Certified external auditor of ISO 27001:2013 (Information Security Management Systems) of the TÜV, IRCA No. 17242. Internal auditor of ISO 27001:2013 of the Hellenic Open University (Quality and Efficiency Office, 2014).
15. Member in various committees and work groups of the Department as well as of the Institution level. Among them was the committee for the allocation of heat and cooling for the School of Engineering. After this I was appointed head for the evaluation committee for the supply of air condition units throughout the School.
16. Member of at least 15 electoral bodies for selecting faculty members for tenure track positions. Head of the advisory committee for at least 3 electoral bodies for selecting faculty members for tenure track positions.

## **5 Participation in the organization of international scientific conferences**

Participation in the organization of the:

1. “Fifth International Symposium on Orthogonal Polynomials, Special Functions and their Applications”, Patras, Greece, 20–24 September, 1999.
2. “International Conference on Differential, Difference Equations and their Applications”, Patras, Greece, 1–5 July, 2002.
3. “International Conference on Differential Equations, Difference Equations and Special Functions. In memory of Professor Panayiotis D. Sifarikas”, Patras, Greece 3–7 September, 2012.

Refer to: Eugenia N. Petropoulou, Associate Professor, Department of Civil Engineering, University of Patras, Greece (jenpetr@upatras.gr)

## 6 Publications

### A. Msc Thesis.

**E. E. Tzirtzilakis**, “Control of boundary layer with injection of a cold air layer through a wall jet”, 1999, Department of Mathematics, University of Patras, Greece (in greek). Supervisor: Professor N. Kafoussias.

### B. PhD Thesis.

**E. E. Tzirtzilakis**, “Study of the flow of biomagnetic fluids under the influence of an applied magnetic field”, 2003, Department of Mathematics, University of Patras, Greece (in greek). Supervisor: Professor N. Kafoussias.

### C. Papers in international journals following a refereeing process.

1. E. Tzirtzilakis, M. Xenos, V. Marinakis, T.C. Bountis, “Interactions and stability of solitary waves in shallow water”, **Chaos, Solitons and Fractals**, Vol. 14, pp.87-95, 2002.
2. E. Tzirtzilakis, V. Marinakis, C. Apokis and T.C. Bountis, “Soliton like solutions of higher order wave equations of the KdV type”, **Journal of Mathematical Physics**, Vol. 43, No 12, pp. 6151-6165, 2002.
3. E. Tzirtzilakis and N. Kafoussias, “Biomagnetic fluid flow over a stretching sheet with non linear temperature dependent magnetization”, **ZAMP**, Vol. 54, pp. 551-565, 2003.
4. E. Tzirtzilakis and G. Tanoudis, “Numerical study of biomagnetic fluid over a stretching sheet with heat transfer”, **International Journal for Numerical Methods in Heat and Fluid Flow**, Vol. 13, No 7, pp. 830-848, 2003.
5. V. Loukopoulos and E. Tzirtzilakis, “Biomagnetic channel flow in spatially varying magnetic field”, **International Journal of Engineering Science**, Vol. 42, pp. 571-590, 2004.
6. E.E. Tzirtzilakis, V.D. Sakalis, N.G. Kafoussias, P.M. Hatzikonstantinou, “Biomagnetic fluid flow in a 3d rectangular duct”, **International Journal for Numerical Methods in Fluids**, Vol. 44, pp. 1279-1298, 2004.
7. P.K. Papadopoulos and E.E. Tzirtzilakis, “Biomagnetic flow in a curved square duct under the influence of an applied magnetic field”, **Physics of Fluids**, Vol. 16, No 8, pp. 2952-2962, 2004.

[Republication in the July issue, 2004 of **Virtual Journal of Biological Physics Research** considered as pioneer work in the field.]

8. E.E. Tzirtzilakis and V.C. Loukopoulos, "Biofluid flow in a channel under the action of a uniform localized magnetic field", **Computational Mechanics**, Vol. 36, No 5, pp. 360-374, 2005.
9. E.E. Tzirtzilakis, "A mathematical model for blood flow in magnetic field", **Physics of Fluids**, Vol. 17, 077103, 2005.  
[Republication in the July issue, 2005 of **Virtual Journal of Biological Physics Research** considered as pioneer work in the field.]
10. E.E. Tzirtzilakis, M. Xenos, V.C. Loukopoulos and N.G. Kafoussias, "Turbulent biomagnetic fluid flow in a rectangular channel under the action of a localized magnetic field", **International Journal of Engineering Science**, Vol. 44, pp. 1205-1224, 2006.
11. E.N. Petropoulou, P.D. Sifarikas and E.E. Tzirtzilakis, "A "discretization" technique for the solution of ODEs", **Journal of Mathematical Analysis and Applications**, Vol. 331, No 1, pp. 279-296, 2007.
12. E.E. Tzirtzilakis, "Biomagnetic fluid flow in a channel with stenosis", **Physica D**, Vol. 237, 66-81, 2008.
13. N.G. Kafoussias, E.E. Tzirtzilakis, and A. Raptis, "Free - forced convective boundary layer flow of a biomagnetic fluid under the action of a localized magnetic field", **Canadian Journal of Physics**, Vol. 86, 447-457, 2008.
14. E.E. Tzirtzilakis, "A simple numerical methodology for BFD problems using stream function vorticity formulation", **Communications in Numerical Methods in Engineering**, Vol. 24, 683-700, 2008.
15. M. Ferdows, E. Tzirtzilakis, Koji Kaino and Chien-Hsin Chen, "Soret and Dufour effects on natural convection heat and mass transfer flow in a porous medium considering internal heat generation", **International Journal of Applied Mathematics & Statistics**, Vol. 13, No D08, 36-48. , 2008.
16. M. Xenos, E. Tzirtzilakis and N. Kafoussias, "Methods of optimizing separation of compressible turbulent boundary-layer over a wedge with heat and mass transfer", **Int. J. Heat and Mass Transfer**, Vol. 52, No 1-2, 488-496, 2009.
17. E. N. Petropoulou, P. D. Sifarikas and E. E. Tzirtzilakis, "A "discretization" technique for the solution of ODEs II", **Numerical Functional Analysis and Optimization**, Vol. 30, No 5-6, pp 613-631, 2009.
18. E. Tzirtzilakis and N. Kafoussias, "Three-dimensional magnetic fluid boundary layer flow over a linearly stretching sheet", **ASME J. Heat Transfer**, Vol. 132, No 1, 011702-1, 2010.
19. E.E. Tzirtzilakis, N.G. Kafoussias, A. Raptis, "Numerical study of forced and free convective boundary layer flow of a magnetic fluid over a flat plate under the action of a localized magnetic field", **ZAMP**, Vol. 61, No 5, 929-947, 2010.

20. E.E. Tzirtzilakis and M.A. Xenos, "Biomagnetic fluid flow in a driven cavity", **MECCANICA**, Vol. 48, No 1, 187–200, 2013.
21. E.N. Petropoulou and E.E. Tzirtzilakis, "On the logistic equation in the complex plane", **Numerical Functional Analysis and Optimization**, Vol. 34, No 7, 770–790, 2013.
22. M.A. Xenos and E.E. Tzirtzilakis, "MHD Effects on Blood Flow in a Stenosis", **Advances in Dynamical Systems and Applications**, Vol. 8, No 2, pp. 427–437, 2013.
23. A. Raptis, M. Xenos, E.E. Tzirtzilakis, and M. Matsagkas, "Finite element analysis of magnetohydrodynamic effects on blood flow in an aneurysmal geometry", **Physics Of Fluids**, Vol. 26, 101901, 2014, doi: 10.1063/1.4895893.
24. E.E. Tzirtzilakis, "Biomagnetic Fluid Flow in an Aneurism Using FerroHydro-Dynamics Principles", **Physics Of Fluids**, 27, 061902, 2015, doi: 10.1063/1.4922757.
25. Md. Shakhaoath Khan, Md. Mahmud Alam, M Ferdows, E.E. Tzirtzilakis, Ifsana Karim and Shuyu Sun, "Rotating Fluid Flow on MHD Radiative Nanofluid past a Stretching Sheet", **International Journal of Advanced Thermofluid Research**, Vol. 2, No. 1, 15–30, 2016.
26. Md. Shakhaoath Khan, Md. Mahmud Alam, E.E. Tzirtzilakis, M Ferdows, and Ifsana Karim, "Finite Difference Solution of MHD Radiative Boundary Layer Flow of a Nanofluid past a Stretching Sheet with Stability Analysis", **International Journal of Advanced Thermofluid Research**, Vol. 2, No. 1, 31–46, 2016.
27. G. Panagopoulos, D. Angelopoulou, E. Tzirtzilakis, P. Giannouloupoulos, "The contribution of Cluster and Discriminant Analysis to the classification of complex aquifer systems", **Environ. Monit. Assess.**, 188:591 (13 pages), 2016.
28. I. karim, M.S. Khan, M.M. Alam, M.A. Rouf, M. Ferdows, E.E. Tzirtzilakis, "Transient Heat And Mass Transfer Flow Through Salt Water In An Ocean By Inclined Angle", **Technological Engineering**, Vol. XIII, No. 2, pp. 21–27, 2016.
29. M. Ferdows, T.S. Khalequ, E.E. Tzirtzilakis, and Sh. Sun, "Effects of Radiation and Thermal Conductivity on MHD Boundary Layer Flow with Heat Transfer along a Vertical Stretching Sheet in a Porous Medium", **Journal of Engineering Thermophysics**, DOI: 10.1134/S1810232817010015, Vol. 26, No. 1, pp. 1–11, 2017.
30. M. Ferdows, A.A. Afify, E.E. Tzirtzilakis, "Hall Current and Viscous Dissipation Effects on Boundary Layer Flow of Heat Transfer Past a Stretching Sheet", **Int. J. Appl. Comput. Math**, DOI 10.1007/s40819-017-0309-5, (17 pages), 2017.

31. M.G. Murtaza, E.E. Tzirtzilakis, & M. Ferdows, “Effect of electrical conductivity and magnetization on the biomagnetic fluid flow over a stretching sheet”, **Z. Angew. Math. Phys.**, Vol. 68(4): art. no 93, DOI 10.1007/s00033-017-0839-z, (15 pages), 2017.
32. M.G. Murtaza, E.E. Tzirtzilakis, M. Ferdows, “A Note on MHD Flow and Heat Transfer over a Curved Stretching Sheet by Considering Variable Thermal Conductivity”, **International Journal of Mathematical and Computational Sciences**, Vol. 12(2), pp. 23-27, 2018.
33. M.G. Murtaza, E.E. Tzirtzilakis, M. Ferdows, “Similarity Solutions of Non-linear Stretched Biomagnetic Flow and Heat Transfer with Signum Function and Temperature Power Law Geometries”, **International Journal of Mathematical and Computational Sciences**, Vol. 12(2), pp. 9-14, 2018.
34. M.G. Murtaza, E.E. Tzirtzilakis, M. Ferdows, “Numerical solution of three dimensional unsteady biomagnetic flow and heat transfer through stretching / shrinking sheet using temperature dependent magnetization.”, **Archives of Mechanics**, Vol. 70(2), pp. 161-185, 2018.
35. T. Ahmed, M. Alam, M. Ferdows, E.E. Tzirtzilakis, “Chemically Reacting Ionized Radiative Fluid Flow Through An Impulsively Started Vertical Plate With Induced Magnetic Field”, **International Journal of Applied Mechanics and Engineering**, Vol. 24 (1), pp.5-36,2019.
36. M.G. Murtaza, M. Ferdows, J.C. Misra, E.E. Tzirtzilakis, “Three-dimensional biomagnetic Maxwell fluid flow over a stretching surface in presence of heat source/sink”, **International Journal of Biomathematics**, Vol. 12 (3), 1950036 (20 pages), 2019.
37. KE. Aslani, L. Benos, E. Tzirtzilakis and I.E. Sarris, “Micromagnetorotation of MHD Micropolar Flows”, **Symmetry**, 12, 148; doi:10.3390/sym12010148, 2020.
38. Md. G. Murtaza, E.E. Tzirtzilakis and M. Ferdows, “Stability and Convergence Analysis of a Biomagnetic Fluid Flow Over a Stretching Sheet in the Presence of a Magnetic Field”, **Symmetry**, 12, 253; doi:10.3390/sym12020253, 2020.
39. K.E. Hoque, M. Ferdows, S. Sawall and E.E. Tzirtzilakis, “The effect of hemodynamic parameters in patient-based coronary artery models with serial stenoses: normal and hypertension cases”, **Computer Methods in Biomechanics and Biomedical Engineering**, DOI: 10.1080/10255842.2020. 1737028, 2020.
40. M. Ferdows, M.G. Murtaza, E.E. Tzirtzilakis, F. Alzahrani, “Numerical study of blood flow and heat transfer through stretching cylinder in the presence of a magnetic dipole”, **Z Angew Math Mech.**, DOI: 10.1002/zamm.201900278, 2020;100:e201900278, 2020.



41. M. Ferdows, G. Murtaza, J.C. Misra, E.E. Tzirtzilakis and A. Alsenafi, “Dual solutions in biomagnetic fluid flow and heat transfer over a nonlinear stretching/shrinking sheet: Application of lie group transformation method”, **Mathematical Biosciences and Engineering**, Vol. 17, Is. 5, 4852–4874, 2020.
42. N. Zaman, M. Ferdows, M.A. Xenos, K.E. Hoque and E.E. Tzirtzilakis, “Effect of Angle Bifurcation and Stenosis in Coronary Arteries: An Idealized Model Study”, **BioMed Research Journal**, 4(2): 220–234, 2020.
43. M. Ferdows, M.G. Murtaza, J.C. Misra, E.E. Tzirtzilakis, F. Alzahrani, “Dual solutions for boundary layer flow and heat transfer of biomagnetic fluid over a stretching/shrinking sheet in presence of a magnetic dipole and a prescribed heat flux”, **International Journal of Applied Electromagnetics and Mechanics**, vol.65, pp. 235–251, <http://dx.doi.org/10.3233/JAE-190101> 2021.
44. K.E. Hoque, M. Ferdows, S. Sawall, E.E. Tzirtzilakis and M.A. Xenos, “The impact of hemodynamic factors in a coronary main artery to detect the atherosclerotic severity: Single and multiple sequential stenosis cases”. **Phys. Fluids** 33, 031903 (2021). <https://doi.org/10.1063/5.0041335>  
[This paper was selected as “Editor’s pick”]
45. Alam, J. Murtaza, G. Tzirtzilakis, E. Ferdows, M. “Biomagnetic Fluid Flow and Heat Transfer Study of blood with Gold Nanoparticles over a Stretching Sheet in the Presence of Magnetic Dipole.” **Fluids** 2021, 6, 113.  
<https://doi.org/10.3390/fluids6030113>
46. Alam, J. Murtaza, G. Tzirtzilakis, E. Ferdows, M. “Effect of Thermal Radiation on Biomagnetic Fluid Flow and Heat Transfer over an Unsteady Stretching Sheet.” **Computer Assisted Methods in Engineering and Science** 2021. <http://dx.doi.org/10.24423/comes.327>
47. M.G. Murtaza, E.E. Tzirtzilakis, M. Ferdows, “A Duality of Biomagnetic fluid flow and heat transfer over a quadratic stretched sheet” **Journal of Power Technologies** Vol. 101 Is. 3 pp.154–162, 2021.
48. A. Gomes, J. Alam, G. Murtaza, T. Sultana, E.E. Tzirtzilakis, M. Ferdows, “Aligned Magnetic Field and Radiation Effects on Biomagnetic Fluid over an Unsteady Stretching Sheet with Various Slip Conditions.” **Applied Math**, Vol. 1, pp. 37–62, 2021. <https://doi.org/10.3390/appliedmath1010004>
49. K.E. Hoque, M. Ferdows, S. Sawall, E.E. Tzirtzilakis and M.A. Xenos, “Hemodynamic characteristics expose the atherosclerotic severity in coronary main arteries: One-dimensional and three-dimensional approaches”. **Phys. Fluids** 33, 121907 (2021). <https://doi.org/10.1063/5.0069106>  
[This paper was selected as “Featured paper” and “Scilight”]

50. A. Gul, E.E. Tzirtzilakis & S.S. Makhanov, "A two-phase, two-way coupled model of targeted magnetic drug delivery for small Reynolds numbers", **Engineering Applications of Computational Fluid Mechanics**, 16:1, 374-396, <https://doi.org/10.1080/19942060.2021.2016493>, 2022.
51. A. Gul, E.E. Tzirtzilakis & S.S. Makhanov, "Simulation of Targeted Magnetic Drug Delivery: Two-way Coupled Biomagnetic Fluid Dynamics Approach", **Phys. Fluids** 34, 021911; <https://doi.org/10.1063/5.0080216>, 2022.  
[This paper was selected as "Featured paper" and "Scilight"]
52. M. Ferdows, J. Alam, G. Murtaza, E.E. Tzirtzilakis, S. Sun, "Biomagnetic Flow with CoFe<sub>2</sub>O<sub>4</sub> Magnetic Particles through an Unsteady Stretching / Shrinking Cylinder". **Magnetochemistry**, 8, 27. [https:// www.mdpi.com /2312-7481/ 8/ 3/ 27](https://www.mdpi.com/2312-7481/8/3/27), 2022.  
[This paper was selected as "Editor's Choice"]
53. J. Alam, M.G. Murtaza, E.E. Tzirtzilakis, M.G. Ferdows, "Magnetohydrodynamic and Ferrohydrodynamic Interactions on the Biomagnetic Flow and Heat Transfer Containing Magnetic Particles Along a Stretched Cylinder", **European Journal of Computational Mechanics**, Vol. 31, Is. 1 [https:// doi.org/ 10.13052/ ejcm2642-2085 .3111](https://doi.org/10.13052/ejcm2642-2085.3111), 2022.
54. M. Mahabub, M. Ferdows, M. Gluam Murtaza, G. Lorenzini, E.E. Tzirtzilakis, "Numerical study of unsteady boundary layer flow of a biomagnetic fluid over a horizontal stretching sheet with magnetic dipole". **Mathematical Modelling of Engineering Problems**, Vol. 9, No. 1, pp. 215-223. [https:// doi.org/ 10.18280/ mmep.090127](https://doi.org/10.18280/mmep.090127), 2022.
55. J. Alam, M.G. Murtaza, E.E. Tzirtzilakis, M.G. Ferdows, "Application of Biomagnetic Fluid Dynamics modeling for simulation of flow with magnetic particles and variable fluid properties over a stretching cylinder", **Mathematics and Computers in Simulation**, Vol. 199, pp. 438-462, [https:// doi.org/ 10.1016/ j.matcom. 2022. 04. 008](https://doi.org/10.1016/j.matcom.2022.04.008), 2022.
56. Alam J, Murtaza MG, Tzirtzilakis EE, Ferdows M. Group method analysis for blood-Mn-ZnFe<sub>2</sub>O<sub>4</sub> flow and heat transfer under ferrohydrodynamics through a stretched cylinder. **Math Meth Appl Sci**. 2022; 11807-11827. doi:10.1002/mma.8482.
57. Alam, J.; Murtaza, M.G., Petropoulou, E.N. Tzirtzilakis, E.E. Ferdows, M. Applications of a Group Theoretical Method on Biomagnetic Fluid Flow and Heat Transfer for Different Shapes of Fe<sub>3</sub>O<sub>4</sub> Magnetic Particles under the Influence of Thermal Radiation and a Magnetic Dipole Over a Cylinder. **Mathematics** 2022, 10, 3520. <https://doi.org/10.3390/math10193520>.
58. S.A. Jumana, M. Ferdows and E.E. Tzirtzilakis, Bio-Magnetic Flow Of Heat Transfer Over Moving Horizontal Plate By The Presence Of Variable Viscosity And Temperature **Journal of Mechanics in Medicine and Biology** <https://doi.org/10.1142/S0219519422500634>.

59. MD Hassan Faruk , Mohammad Ferdows , and E. E. Tzirtzilakis , “Hyperthermia Temperature Reduction in Bio Magnetic Flow:Thermal Transfer in Fe<sub>3</sub>O<sub>4</sub>-Blood Particle Suspension with Uniform and Non-Uniform Effects”, **Physics of Fluids** 35, 011902 (2023); <https://doi.org/10.1063/5.0128247>
60. M. G. Murtaza, Tamanna Akter, E. E. Tzirtzilakis and M. Ferdows, “Numerical study of biomagnetic fluid flow over an unsteady curved stretching sheet in the presence of magnetic field”, **Advances and Applications in Fluid Mechanics** 30(1) (2023), 35-62. <http://dx.doi.org/10.17654/0973468623003>.
61. J. Alam, M.G. Murtaza, E.E. Tzirtzilakis, M. Ferdows, “Parametric Simulation of Biomagnetic Fluid with Magnetic Particles Over a Swirling Stretchable Cylinder Under Magnetic Field Effect” **BioNanoScience** (2023), <https://doi.org/10.1007/s12668-023-01117-x>.
62. Murtaza MG, Alam J, Tzirtzilakis EE, Ferdows M. Numerical Simulation of Slip Flow and Heat Transfer of Biomagnetic Fluid over a Stretching Sheet in the Presence of a Magnetic Dipole with Temperature Dependent Viscosity. **Contemp. Math.** [Internet]. 2023 Jun. 5 [cited 2023 Jun. 11];4(2):347-61. <https://doi.org/10.37256/cm.4220232685>
63. Alam, J., Murtaza, M.G., Tzirtzilakis, E.E. Ferdows M. A Parametric Simulation of MHD Flow and Heat Transfer of Blood-Fe<sub>3</sub>O<sub>4</sub> Over an Exponentially Stretching Cylinder. **BioNanoSci.** (2023). <https://doi.org/10.1007/s12668-023-01141-x>
64. Murtaza MG, Begum J, Tzirtzilakis E, Ferdows M. MHD Flow and Heat Transfer of Water-Based Nanofluid Passing a Permeable Exponentially Shrinking Sheet with Thermal Radiation. **Contemp. Math.** 4(2):358–7. Available from: <https://ojs.wiserpub.com/index.php/CM/article/view/2684>
65. Sultana Jahan, Mohammad Ferdows & Efstratios Tzirtzilakis (2023) Convective flow of hybrid nano particles in combination of TiO<sub>2</sub>+CuO/engine oil MoS<sub>2</sub>+ZnO/engine oil and Al<sub>2</sub>O<sub>3</sub>+Cu/engine oil with viscous dissipation over vertically moving surface: Numerical and Galerkin approach, **Numerical Heat Transfer, Part A: Applications**, DOI: 10.1080/10407782.2023.2261145.
66. Chrimatopoulos, G. Tzirtzilakis, E.E. Xenos, M.A. Magnetohydrodynamic and Ferrohydrodynamic Fluid Flow Using the Finite Volume Method. **Fluids** 2024, 9, 5. <https://doi.org/10.3390/fluids9010005>.
67. Ferdows M, Jahan S, Tzirtzilakis E, Sun S. Magnetohydrodynamic hybrid nanofluid flow through moving thin needle considering variable viscosity and thermal conductivity. **Advances in Mechanical Engineering**. 2023 15 (11) doi:10.1177/16878132231208272.
68. Murtaza, G. Bonik, L. Tzirtzilakis, E.E. Ferdows, M. Finite Difference Simulation on Biomagnetic Fluid Flow and Heat Transfer with Gold Nanoparticles towards a Shrinking Sheet in the Presence of a Magnetic Dipole. **Comput.**

- Sci. Math. Forum** 2023, 7, 18. <https://doi.org/10.3390/IOCMA2023-14398>
69. Murtaza, G. Gomes, A. Alam, J. Tzirtzilakis, E.E. Ferdows, M. Numerical Solution of The Effects of Variable Fluid Properties on Biomagnetic Fluid over an Unsteady Stretching Sheet. **Comput. Sci. Math. Forum** 2023, 7, 15. <https://doi.org/10.3390/IOCMA2023-14399>.
70. M. G. Murtaza, Jahangir Alam, E.E. Tzirtzilakis, Md. Shamsuddin and M. Ferdows, Effects of Variable Fluid Properties and Mixed Convection on Biomagnetic Fluid Flow and Heat Transfer over a Stretching Sheet in the presence of Magnetic Dipole, **Journal of Power Technologies** 103 (4) 193-208, 2023. ISSN 2083-4195. Available at: Journal page
71. E.N. Petropoulou, M. Ferdows, E.E. Tzirtzilakis. Exact solutions of Burgers equation with moving boundary. **J. Math. Phys.** 1 March 2024; 65 (3): 031507. Journal page.
72. J. Alam, G. Murtaza, E.E. Tzirtzilakis, S. Sun, M. Ferdows, Flow and Heat Transfer of  $CoFe_2O_4$ -Blood Due to a Rotating Stretchable Cylinder under the Influence of a Magnetic Field. **Bioengineering** 2024, 11, 317. Journal page.
73. M.G. Murtaza, J.C. Misra, E.E. Tzirtzilakis, M. Ferdows. Biomagnetic fluid flow on a nonlinearly stretching sheet with variable thickness in a magnetic environment. **J. Adv. App. Comput. Math.** 2023, 10, 163-177. Journal page.
74. Jahangir Alam, M. G. Murtaza, E. E. Tzirtzilakis and M. Ferdows, Partial slip effect of Cu, Au, TiO<sub>2</sub>-nanoparticles in steady biomagnetic fluid flow and heat transfer over a stretching sheet in the presence of magnetic dipole, **International Journal of Materials Engineering and Technology** 23(1) (2024), 37-56. Journal page
75. R. Prodhan, M. Ferdows, J.C. Misra, E. Tzirtzilakis and M.G. Murtaza, Non-Similar Analysis of Mixed Convection Biomagnetic Boundary Layer Flow Over a Vertical Plate with Magnetization and Localized Heating/Cooling, **European Journal of Computational Mechanics**, Vol. 33 2, 1-30. Journal page
76. Sadia Anjum Jumana, M.G. Murtaza, E.E. Tzirtzilakis, M. Ferdows, Biomagnetic Flow with Magnetic Particles over a continuously moving sheet affected by a magnetic dipole, **Communications in Nonlinear Science and Numerical Simulation** (2024), CNSNS 108132
77. Kyriaki-Evangelia Aslani, Efstratios Tzirtzilakis, Ioannis E. Sarris; On the mechanics of conducting micropolar fluids with magnetic particles: Vorticity-microrotation difference. **Physics of Fluids**, 1 October 2024; 36 (10): 102006. doi: 10.1063/5.0231232.
78. Theofanis Aravanis, Grigorios Chrimatopoulos, Michalis Xenos, Efstratios E. Tzirtzilakis; Forecasting two-dimensional channel flow using machine learning. **Physics of Fluids** 1 October 2024; 36 (10): 103617. doi:10.1063/5.0231005

79. Anjum Jumana, S., Ferdows, M., Tzirtzilakis, E.E., Murtaza, M.G.: Flow of a biomagnetic fluid embedded by magnetic dipole over a continuously moving sheet. **Z Angew Math Mech.** e202100203 (2024). doi:10.1002/zamm.202100203

#### **D. Papers in special volumes and proceedings.**

1. E. Tzirtzilakis and N. Kafoussias, “Comparative numerical study of the flow of a biomagnetic fluid over a flat stretched sheet under the influence of an applied magnetic fluid” (in Greek), In: Proceedings of the 8<sup>th</sup> National Conference of Mathematical Analysis Xanthi, Greece, 29-30 September 2000, Xanthi (2002), 95-103.
2. E. Tzirtzilakis and M. Xenos, “Numerical study of solitons in a thin water layer” (in greek), In: Order and Chaos in Non-Linear Dynamic Systems, G. A. Pneumatikos Editions, Athens 2000, 391-398.
3. E. Tzirtzilakis and N. Kafoussias “Mathematical models for biomagnetic fluid flow and applications”, In: Proceedings of the 6th National Congress on Mechanics, Thessaloniki, Greece, 19-21 July, 2001, 2, 227-232, 2001.
4. E. Tzirtzilakis, N. Kafoussias and P. M. Hatzikonstantinou, “Biomagnetic fluid flow in a rectangular duct”, In: Proceedings of the 4th GRACM Congress on Computational Mechanics, Patras, Greece, 27-29 June 2002, 503-510.
5. C.L. Goudas, G.A. Katsiaris, N. Kafoussias, C. Massalas, G. Pneumatikos, M. Xenos and E. Tzirtzilakis, “Longshore current modification near the boundary by seabed groin arrangements: A numerical approach”, In: SOFT SHORE PROTECTION An Environmental Innovation of Coastal Engineering, eds. C. Goudas, G. Katsiaris, V. May and T. Karambas, Kluwer Academic Publishers, 2003, 311-336.
6. N. G. Kafoussias and E. E. Tzirtzilakis, “A mathematical model of biomagnetic fluid flow”, In: Recent Advances in Mechanics and related fields, eds. G. Katsiaris, V. Markellos, J. Hadjidemetriou. Patras, Greece, 2003, 115-130.
7. E. E. Tzirtzilakis, Ch. Skokos & T. C. Bountis, “A numerical study of soliton solutions of the Boussinesq equation using spectral methods”, In: ICNAAM 2004, International Conference on Numerical Analysis and Applied Mathematics 2004, eds. Simos T. E. & Tsitouras Ch., Wiley-VCH, 2004, pp. 415-418 (extended abstract).
8. E. E. Tzirtzilakis, Ch. Skokos & T. C. Bountis, “Numerical solution of the Boussinesq equation using spectral methods and stability of solitary wave propagation”, In: Proceedings of the 1st International Conference From Scientific Computing to Computational Engineering, (1st IC-SCCE), Athens, Greece, 8-10 September, 2004.
9. M. Xenos, E.E. Tzirtzilakis, V.C. Loukopoulos, N.G. Kafoussias, “Blood flow in a rectangular channel under the action of a magnetic field”, In: Proceedings of the 1st International Conference From Scientific Computing to

- Computational Engineering, (1st IC-SCCE), Athens, Greece, 8–10 September, 2004.
10. E.E. Tzirtzilakis, “Mathematical Modelling And Simulations Of Blood Flow In Magnetic Field”, (Invited Paper), In: Proceedings of the 2nd International Conference From Scientific Computing to Computational Engineering, (2nd IC-SCCE), Athens, Greece, 7–10 July, 2006.
  11. M. Xenos, E. Tzirtzilakis and N. Kafoussias, “Compressible turbulent boundary layer flow control over a wedge”, In: Proceedings of the 2nd International Conference From Scientific Computing to Computational Engineering, (2nd IC-SCCE), Athens, Greece, 7–10 July, 2006.
  12. E.E. Tzirtzilakis and M.A. Xenos, “Biomagnetic fluid flow in a driven cavity”, In: Proceedings of the 7th GRACM International Congress on Computational Mechanics, Athens, Greece, June 30th – July 2nd, 2011.
  13. A.A. Raptis, M.A. Xenos, E.E. Tzirtzilakis and M.I. Matsagkas, “Magnetohydrodynamic Effects On Blood Flow In An Aneurysmal Geometry”, In: Proceedings of the 6th International Conference from Scientific Computing to Computational Engineering, paper 37, Athens, 9–12, 2014.
  14. M.G. Murtaza, M. Ferdows, E.E. Tzirtzilakis, “Effect of variable viscosity and variable thermal conductivity of biomagnetic fluid flow and heat transfer over a stretching sheet in the presence of magnetic dipole”, **Proceedings of the 1st International Conference on Industrial and Mechanical Engineering and Operations Management (IMEOM)**, Dhaka, Bangladesh, 2017.
  15. M.G. Murtaza, E.E. Tzirtzilakis, M. Ferdows, “Three-Dimensional Biomagnetic Flow and Heat Transfer over a Stretching Surface with Variable Fluid Properties”. In: Singh V., Gao D., Fischer A. (eds) *Advances in Mathematical Methods and High Performance Computing. **Advances in Mechanics and Mathematics***, vol 41, 2019. Springer, Cham, DOI: [https://doi.org/10.1007/978-3-030-02487-1\\_25](https://doi.org/10.1007/978-3-030-02487-1_25).
  16. M.G. Murtaza, E.E. Tzirtzilakis, and M. Ferdows, “Biomagnetic fluid flow past a stretching / shrinking sheet with slip conditions using lie group analysis”, **AIP Conference Proceedings 2121, 050005 (2019)** <https://doi.org/10.1063/1.5115892>.
  17. A. Jahangir, M.G. Murtaza, E.E. Tzirtzilakis, and M. Ferdows, “Mixed convection flow and heat transfer of Biomagnetic fluid with magnetic/non – magnetic particles due to a stretched cylinder in the presence of a magnetic dipole”, **Proceedings of International Exchange and Innovation Conference on Engineering & Sciences (IEICES)**. 8, pp.76–83, 2022–10–20. <https://doi.org/10.5109/5909065>.
  18. Murtaza, M.G. Bonik, L. Tzirtzilakis, E.E. Ferdows, M. Finite Difference Simulation on Biomagnetic Fluid Flow and Heat Transfer with Gold Nanoparti-

- cles towards a Shrinking Sheet in the Presence of a Magnetic Dipole. **Comput. Sci. Math. Forum** 2023, 6, x. <https://doi.org/10.3390/xxxxx>
19. Murtaza, M.G. Gomes, A. Alam, J. Tzirtzilakis, E.E. Ferdows, M. Numerical Solution of The Effects of Variable Fluid Properties on Biomagnetic Fluid over an Unsteady Stretching Sheet. **Comput. Sci. Math. Forum** 2023, 7(1) 15. <https://doi.org/10.3390/IOCMA2023-14399>
  20. J. Alam, M.G. Murtaza, E.E. Tzirtzilakis, M. Ferdows, Study of Biomagnetic fluid flow and heat transfer containing magnetic particles over a cylinder subject to prescribed heat flux, **8th Thermal and Fluids Engineering Conference (TFEC)** pp. 1087–1096, 2023. DOI: 10.1615/TFEC2023.bio.045594
  21. J. Alam, M.G. Murtaza, E.E. Tzirtzilakis, M. Ferdows, Stability And Convergence Analysis Of Time Dependent  $Fe_3O_4$  / Blood Flow And Heat Transfer Over A Stretching Cylinder, **9th Thermal and Fluids Engineering Conference (TFEC)** April 21–24, 2024.
  22. T. Aravanis, G. Chrimatopoulos, M. Xenos, E.E. Tzirtzilakis, “Machine-Learning Modelling Of A Fluid Flow In A Two dimensional Channel”, In: Proceedings of the **11th International Conference From Scientific Computing to Computational Engineering**, (11th IC-SCCE), Loutraki, 3–6 July, 2024.
  23. Kalaryti, T.P.; Fourniotis, N.T.; Tzirtzilakis, E.E. Effect of submerged vegetation on spatial structure of open-channel flow, in Proceedings of the 8th International Electronic Conference on Water Sciences, 14–16 October 2024, MDPI: Basel, Switzerland

#### E. Books–Lecture Notes.

1. E.E. Tzirtzilakis and M.A. Xenos, “**Fluid Mechanics with applications**” , ISBN: 978–960–9427–75–3, Edition: 1/2018, Editor GoTsis (in Greek).
2. E.E. Tzirtzilakis, “**Elements of optimization theory & operational resources management**”, (in Greek) Nafpaktos, Greece 2008, (132 pages). Lecture Notes for the students of the Department of Telecommunications Systems and Networks, Technological Educational Institute of Messolonghi.
3. E.E. Tzirtzilakis, “**Elements of optimization theory**”, (in greek), Nafpaktos, Greece 2008, (208 pages), ISBN:978–960–930431–3.
4. E.E. Tzirtzilakis, N.G. Kafoussias, “**Numerical schemes and Difference Equations**”, In E-Book: “Methods for studying partial difference equations. With a connection to numerical schemes and applications”, Bentham Science Publishers, eISBN: 978-1-60805-152-6, pp. 111–140, 2010. Chapter in e-Book).

## 7 Scholarships

1. Scholarship from the Greek State Scholarships Foundation for the second year (1998-1999) of master studies as the student with the highest grades.
2. Scholarship for **postdoc research** from the Greek State Scholarships Foundation, for the “Study of Problems of Fluid Mechanics and Biomechanics”. Duration: From 01-11-2005 until 01-06-2007.

## 8 References – Distinctions

Inclusion three times in the database “Data for Updated science-wide author databases of standardized citation indicators”, which includes the top 2% of the researchers world-wide with respect the number of citations in a specific area of research. For the years 2020, 2021 and 2023 in the research area “Mechanical Engineering & Transports, Applied Mathematics, Mathematics & Statistics” and in 2022 in the area “Mechanical Engineering & Transports, Engineering, Fluids & Plasmas”. The corresponding references are:

- Baas, Jeroen; Boyack, Kevin; Ioannidis, John P.A. (2020), “Data for "Updated science-wide author databases of standardized citation indicators”, Mendeley Data, V2, doi: 10.17632/btchxktzyw.2  
Scientific area: Mechanical Engineering & Transports, Applied Mathematics, Mathematics & Statistics rating 1986 and 1789 out of 92645. The references included up to the year 2019.
- Baas, Jeroen; Boyack, Kevin; Ioannidis, John P.A. (2021), “August 2021 data-update for “Updated science-wide author databases of standardized citation indicators” ”, Mendeley Data, V3, doi: 10.17632/btchxktzyw.3  
Scientific area: Mechanical Engineering & Transports, Applied Mathematics, Mathematics & Statistics rating 2177 and 1975 out of 109724. The references included up to the year 2020.
- Ioannidis, John P.A. (2022), “September 2022 data-update for “Updated science-wide author databases of standardized citation indicators” ”, Mendeley Data, V4, doi: 10.17632/btchxktzyw.4  
Scientific area Mechanical Engineering & Transports, Engineering, Fluids & Plasmas rating 2616 and 2402 out of 121447. The references included up to the year 2021.
- Ioannidis, John P.A. (2023), “October 2023 data-update for “Updated science-wide author databases of standardized citation indicators” ”, Elsevier Data Repository, V6, doi: 10.17632/btchxktzyw.6.



Scientific area Mechanical Engineering & Transports, Applied Mathematics, Mathematics & Statistics rating 2142 and 2113 out of 133525. The references included up to the year 2022. Rating 1209 and 3182 out of 133525 for the year 2022 alone.

- Source: Google Scholar **Total References: 2237**, last update: 25/01/2025.  
h-index: 24  
List of references are available at Google Scholar
- Source: Scopus  
**Total references: 1507, excluding self-citations: 1230**, last update: 25/01/2025.  
h-index: 20

## 9 Participation in research and development programmes – Professional experience

1. Participation in the cultural program **INTERREG II** (Greece-Italy), granted by Ministry of National Economy to the University of Patras, Greece.  
**Duration:** 2-6/2000 and 9/2000. (Included a one month stay at the University of Bologna, Italy).  
**Position:** Trainee.
2. Participation in the research program **PENED 99**, granted by Greek General Secretariat of Research and Technology to the Department of Mathematics, University of Patras, Greece, with title: “Applications of non linear dynamics and chaos in biomedical and biochemical systems”.  
**Duration:** 11-12/1999, 1, 7, 8, 10 / 2000.  
**Position:** Researcher.
3. Participation in the research program **K. Karatheodoris** granted by the Research Committee University of Patras to the Department of Mathematics, University of Patras, Greece, with title “Study of biomagnetic fluid flow under the influence of an applied magnetic field”.  
**Duration:** 11/2000 - 11/2003.  
**Position:** Researcher.
4. Participation in the research program **Pythagoras II**, granted by the Ministry of National Education and Religious Affairs to the Department of Mathematics, University of Patras, Greece, with title: “Differential Equations, Difference Equations and their Applications in Fluid Mechanics”.  
**Duration:** 01/09/2005 - 31/12/2006.

**Position:** Researcher.

5. Participation in the development program **EPEAEK II** cogranted by the European Union to the Hellenic Open University, Greece, with title “Development of educational material by using new technologies for the undergraduate and postgraduate programmes”, which was included in the program entitled “Development and improvement of the quality of services of the Hellenic Open University”.

**Duration:** 03/09/2007-30/09/2009.

**Position:** Scientific personnel of the Laboratory of Educational Material and Methodology (e-Comet Lab). Especially from 08/05/2008-30/06/2009: Head of the Division of Quality Assurance of e-Comet Lab.

6. Participation in the operational program **Education and life learning** cogranted by the European Union to the Technological Educational Institute of Messolonghi.

**Duration:** 3-6/2011.

**Position:** Scientific Staff of MODIP of the Technological Educational Institute of Messolonghi.

7. Participation in the development program **ESPA 2007–2013** cogranted by the European Union to the Hellenic Open University, Greece, with title “Development actions of the Laboratory of Educational Material and Methodology for the support of the educational work of the Hellenic Open University”.

**Duration:** 14/02/2011–31/12/2014.

**Position:** Scientific personnel of the Laboratory of Educational Material and Methodology (e-Comet Lab). Especially from 08/05/2011–31/12/2014: Head of the Division of Quality Assurance of e-Comet lab.

8. Participation in the research program entitled “Hydrogeological – Hydraulic study for the irrigation of Zacharo Municipality” granted by the Zacharo Municipality, Greece.

**Duration:** 02/02/2023 – 02/08/2023.

**Position:** Researcher.

9. Participation in the research program entitled “Investigation of the hydraulic behavior and suggestions for the regulation of the hydrodynamic system of Trichonida - Lysimachia lakes, in Western Greece" granted by the Region of Western Greece, Greece.

**Duration:** 01/07/2022 – 30/04/2023.

**Position:** Researcher.

10. Regional head of the research program granted by “Greece 2.0 – National Recovery and Resilience Fund, European Union, Next Generation EU” action: “Flagship actions in interdisciplinary scientific fields with a special focus on the productive fabric” title: “SAFE AORTA: Artificial Intelligence clinic decision support system for abdominal aortic aneurisms” code: ÔAEDR0535983.

**Duration:** 02/08/2023 – 01/12/2025.

**Position:** Project Leader for the University of the Peloponnese.

## 10 Participation in conferences

### A. Participation in conferences with presentation of scientific results.

1. E. Tzirtzilakis and M. Xenos, “Numerical study of solitons in a thin water layer”, **12th Summer School/ National conference in Non-linear Dynamics, Chaos and Complexity**, Patras, Greece, 14-24 July, 1999.
2. E. Tzirtzilakis and N. Kafoussias, “Comparative numerical study of the flow of a biomagnetic fluid over a flat stretched sheet under the influence of an applied magnetic fluid” (in greek), **8th National Conference of Mathematical Analysis**, Xanthi, Greece, 29-30 September 2000.
3. E. Tzirtzilakis and G. Tanoudis, “Numerical Study of Biomagnetic Fluid Over a Stretching Sheet With Heat Transfer”, **Sixth International Symposium On Orthogonal Polynomials, Special Functions and Applications (OPSFA)**, Rome, Italy, 18-22 June, 2001.
4. E. Tzirtzilakis and N. Kafoussias, “Mathematical Models For Biomagnetic Fluid Flow and Applications”, **6th National Congress on Mechanics**, Thessaloniki, 19-21 July, 2001.
5. E. Tzirtzilakis, E. Marinakis, M. Xenos and A. Apokis, “Solitary wave transmission in a thin water layer” **1412th Summer School/ National conference in Non-linear Dynamics, Chaos and Complexity**, Patras, Greece, July, 2001.
6. E. Tzirtzilakis, N. Kafoussias and P. M. Hatzikonstantinou, “Biomagnetic Fluid Flow In A Rectangular Duct”, **4th GRACM Congress on Computational Mechanics**, Patras, Greece, 27-29 June, 2002.
7. E.E. Tzirtzilakis, V.D. Sakalis, N.G. Kafoussias, P.M. Hatzikonstantinou, “Biomagnetic Fluid Flow In A 3d Duct”, **International Conference on Differential, Difference Equations and their Applications**, Patras, Greece, 1-5 July, 2002.
8. E. Tzirtzilakis, E. Marinakis, C. Apokis, A. Bountis, “Numerical study of soliton solutions of higher order evolution equations of KdV type”, **9th National**

- Conference of Mathematical Analysis**, Chania, Greece, 5-7 September, 2002.
9. E.E. Tzirtzilakis, V.D. Sakalis, N.G. Kafoussias, P.M. Hatzikonstantinou, "Numerical, Existence and Uniqueness Results of Biomagnetic Fluid Flow", **Conference on Applied and Industrial Mathematics**, Pitesti, Romania, October, 11-13, 2002.
  10. E.E. Tzirtzilakis, V.D. Sakalis, N.G. Kafoussias, P.M. Hatzikonstantinou, "Biomagnetic (Blood) Fluid Flow in a 3d Duct", **Second M.I.T. Conference on Computational Fluid and Solid Mechanics**, Massachusetts Institute of Technology, Massachusetts, USA, June 17-20, 2003.
  11. E. E. Tzirtzilakis, "Numerical solution of BFD equations", **11th National Conference of Mathematical Analysis**, Thessaloniki, Greece, May, 23-25, 2006.
  12. E.E. Tzirtzilakis, "Mathematical Modelling And Simulations of Blood Flow In Magnetic Field", (INVITED PAPER), **2nd International Conference From Scientific Computing to Computational Engineering, (2nd IC-SCCE)**, Athens, Greece, 5-8 July, 2006.
  13. E.E. Tzirtzilakis, "A Mathematical Model for Blood Flow in Magnetic Field", **International Symposium on Trends in Applications of Mathematics to Mechanics (STAMM 2006)**, Vienna, Austria, July 10-14, 2006.
  14. E.N. Petropoulou, P.D. Siafarikas and E.E. Tzirtzilakis, "On the analytic structure of the complex Blasius problem", **International Conference on Difference Equations and Applications (ICDEA 2007)**, Lisbon, Portugal, July 23-27, 2007.
  15. E.E. Tzirtzilakis, "Biomagnetic fluid flow in a channel with stenosis", **12th National Conference of Mathematical Analysis**, Athens, Greece, May, 15-17, 2008.
  16. E.E. Tzirtzilakis, E.N. Petropoulou, "Some results on the Logistic Equation in the complex plane", **Progress on Difference Equations –PODE 2010**, Xanthi, Greece, May 21-25, 2010.
  17. E.E. Tzirtzilakis and M.A. Xenos, "Biomagnetic Fluid Flow in a Driven Cavity", **7th GRACM International Congress on Computational Mechanics**, Athens, Greece, 30 June–2 July, 2011.
  18. E.E. Tzirtzilakis and M.A. Xenos, "Biomagnetic Fluid Flow in a Driven Cavity", **14th National Conference of Mathematical Analysis**, University of Patras, Patras, Greece, May 18–19, 2012.
  19. E.E. Tzirtzilakis, E.N. Petropoulou, "On the Logistic equation in the complex plane", **International conference on differential equations, difference equations and special functions–ICDDES F 2012**, Patras, Greece, September 03–07, 2012.

20. E.E. Tzirtzilakis, “Biomagnetic Fluid Flow in an Aneurism”, **10th AIMS Conference on Dynamical Systems Differential Equations and Applications**, Madrid, Spain July 7–11, 2014.
21. E.E. Tzirtzilakis, “Mathematical formulation and solution technique of Biomagnetic Fluid Dynamic problems”, 15th Panhellenic Conference of Mathematical Analysis, Heraklion, Crete, Greece, May 27–29, 2016.
22. E.E. Tzirtzilakis, “Mathematical formulation and solution technique of Biomagnetic Fluid flow in an aneurism”, (INVITED SPEAKER, 35 MINUTES TALK), **Differential Equations and Applications**, Brno, Czech Republic, September 4–7, 2017.
23. G. Murtaza, E. Tzirtzilakis and M. Ferdows, “Effect Of Electrical Conductivity And Magnetization On The Biomagnetic Fluid Flow Over A Stretching Sheet”, **9th GRACM International Congress on Computational Mechanics, Chania, Greece**, 2–4 June, 2018.
24. E. Tzirtzilakis, “Biomagnetic Fluid Flows in pathological geometries (Aneurism or Stenosis)”, **11th Panhellenic Conference “Fluid Flow Phenomena”**, Kozani, 23–24 November, 2018 (in Greek).

#### **B. Attendance of conferences.**

1. 11th Summer School/ National conference in Non-Linear Dynamics, Chaos and Complexity, Livadia, Greece, 13–25 July, 1998.
2. 5th International Symposium on Orthogonal Polynomials, Special Functions and their Applications, Patras, Greece, 20–24 September, 1999.
3. First International Conference On Soft Shore Protection Against Coastal Erosion, Patras, Greece, 18–21 October, 2000.
4. 1st International Seminar on “Mathematics of Computers and Decision Making”, Patras, Greece, 25–26 May, 2001.
5. E.E. Tzirtzilakis and M.A. Xenos, “MHD effects on blood flow in a stenosis”, **International conference on differential equations, difference equations and special functions–ICDDESf 2012**, Patras, Greece, September 03–07, 2012.
6. A.A. Raptis, M.A. Xenos, E.E. Tzirtzilakis and M.I. Matsagkas, “Magneto-hydrodynamic Effects On Blood Flow In An Aneurysmal Geometry”, **6th International Conference from Scientific Computing to Computational Engineering**, paper 37, Athens, 9–12 July, 2014.
7. M.G. Murtaza, E.E. Tzirtzilakis, and M. Ferdows, “Biomagnetic fluid flow past a stretching / shrinking sheet with slip conditions using lie group analysis”, **8TH BSME International Conference On Thermal Engineering, 19–21 December 2018, Dhaka, Bangladesh**

## 11 Teaching experience

### Postgraduate Courses

Teaching of the following **postgraduate** courses:

- **“Numerical solution of ordinary differential equations”** (Academic years 2009–today, except from 2008-2009, 2015–2016). Obligatory course of a) the joint Postgraduate program leading to MSc in “Mathematics for computers and decision making” of the Departments of Mathematics and Computer Engineering & Informatics, of the University of Patras, Greece, b) the Postgraduate program leading to MSc in “Computational mathematics, Informatics in education” of the Department of Mathematics, of the University of Patras, Greece. (The course was taught by E. E. Tzirtzilakis and Professor M. Vrahatis.)
- **“Applications of computational mathematics”** (Academic years 2007–2015, except from 2008-2009). Free choice course of a) the joint Postgraduate program leading to MSc in “Mathematics for computers and decision making” of the Departments of Mathematics and Computer Engineering & Informatics, of the University of Patras, Greece. (The course was taught by E. E. Tzirtzilakis and Assistant Professor O. Raggos.)
- **“Principles of environmental physics”** (Academic year 2006–2007). Annual obligatory course part of the joint Postgraduate program leading in MSc in “Environmental sciences” of the Departments of Mathematics, Physics, Chemistry, Biology and Geology, of the University of Patras, Greece. (The course was taught by E. E. Tzirtzilakis and Professors P. Yianoulis and A. Argiriou.)

### Undergraduate Courses<sup>3</sup>

- Teaching of the following undergraduate course at the Hellenic Open University, Greece:
  - ◇ **“FYE10-General Mathematics I”** (Academic years 2008–2012). Obligatory course of the program “Studies in Natural Sciences” leading to BSc.
  - ◇ **“PLI10-Mathematics for Computer Science I”** (Academic years 2017–2022). Obligatory course of the program “Computer Science” leading to BSc.
- Teaching of the following undergraduate courses at Technological Educational Institute (TEI) of Western Greece at the Department of Mechanical Engineering (academic years 2015–2019) and at the University of the Peloponnese Department of Mechanical Engineering (academic years 2019–today):

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<sup>3</sup>When not mentioned otherwise, the course is theoretical with no laboratories.

1. **Fluid Mechanics I** (Theory and laboratories) (Academic years 2015–2022)
  2. **CFD** (Theory and laboratories) (Academic years 2019–2022)
  3. **Programming I** (Theory and laboratories) (Academic years 2016–2019)
  4. **CFD and Energy systems** (laboratories) (Academic years 2016–2019)
  5. **Fluid Mechanics II** (laboratories) (Academic years 2015–2022)
  6. **Programming II** (laboratories) (Academic years 2015–2019)
  7. **Operational Research** (Theory) (Academic years 2019–2022)
  8. **Numerical Analysis** (Theory and Laboratories) (Academic years 2018–2019)
- Teaching of the following undergraduate courses at the former Technological Educational Institute of Messolonghi, later Technological Educational Institute of Western Greece (academic years 2003–2004, 2005–2010):
    - ◇ at the Department of Mechanical & Water Resources Engineering:
      1. **“Mathematics I”** (Academic years 2005–2014)
      2. **“Mathematics II”** (Academic years 2006–2009)
      3. **“Applied Mathematics”** (Academic years 2009–2015)
      4. **“Special Topics in Physics”** (Academic years 2009–2014)
      5. **“Fluid Mechanics”** (Academic years 2010–2015)
      6. **“Programming I”** (Theory and laboratories) (Academic years 2011–2014)
      7. **“Programming II”** (Theory and laboratories) (Academic years 2011–2015)
      8. **“Finite Elements”** (Academic years 2013–2015)
      9. **“Energy and Environment”** (Academic years 2013–2015)
      10. **“Quality Control”** (Academic years 2013–2015)
      11. **“Data Bases Systems”** (Academic years 2013–2015)
      12. **“Professional Legislation and Ethics”** (Academic years 2013–2015)
      13. **“Thermodynamics and Heat Transfer”** (Academic years 2013–2015)
      14. **“Working Safety Rules and Environmental Protection”** (Academic years 2013–2015)
      15. **“Hydraulics”** (Academic year 2014–2015)
    - ◇ at the Department of Administration of Cooperative Organizations:
      1. **“Programming II”** (Theory and laboratories) (Academic year 2005–2006)
      2. **“Programming III”** (Only laboratories) (Academic years 2005–2007)
    - ◇ at the Department of Applied Informatics in Management & Finance:
      1. **“Office automation”** (Theory and laboratories) (Academic year 2003–2004)

2. **“Algorithms”** (Only laboratories) (Academic year 2003-2004)
  3. **“Programming I”** (Only laboratories) (Academic year 2003-2004)
- ◇ at the Department of Telecommunications Systems and Networks:
1. **“Optimization theory & operational resources management”** (Academic years 2007-2009)

## Thesis

- Co-supervisor of PhD thesis of Md. Ghulam Murtaza Talukder University of Dhaka Bangladesh. Joint supervision with professor Mohammad Ferdows, Department of Applied Mathematics, University of Dhaka Bangladesh. PhD Thesis title: “Biomagnetic fluid flows over a stretching sheet”. At the papers the PhD author is mentioned as M.G. Murtaza.
- Supervisor of the Master in Science Thesis of M. Iliopoulou: “Biomagnetic Fluid Flow in an aneurism”, joint Postgraduate program leading to MSc in “Mathematics for computers and decision making” of the Departments of Mathematics and Computer Engineering & Informatics, of the University of Patras, Greece, 2015.
- Supervisor of more than fifteen graduate level Thesis at TEI of Western Greece and University of the Peloponnese, Department of Mechanical Engineering

## Assistance Teaching

Assistance at teaching undergraduate courses, while being a PhD student

- At the Department of Mathematics of the University of Patras, Greece:
  1. **“Computational fluid dynamics I”** (Academic years 1999-2002)
  2. **“Computational fluid dynamics I”** (Academic years 1999-2002)
  3. **“Fluid mechanics I”** (Academic years 2001-2002)
  4. **“Fluid mechanics II”** (Academic years 2000-2002)
- At the Department of Chemistry of the University of Patras, Greece:
  - { **“Mathematics II”** (Academic years 2000-2001)

## 12 Scientific Lectures

1. “Biomagnetic fluid dynamics”, Dipartimento di Fisica, Bologna, Italy, 20 September, 2000. (During the participation in the program Interreg II (Greece-Italy).)



2. “A Mathematical model for blood flow in magnetic field”, Department of Applied Mathematics and Theoretical Physics, Centre for Mathematical Sciences, University of Cambridge, U.K., 13 May, 2004 (as invited speaker during a scientific visit).
3. “Some physical problems of Biomagnetic Fluid Dynamics (BFD)”, Department of Applied Mathematics, University of Zaragoza, Spain, 16 February, 2012 (as invited speaker during a scientific visit).
4. “Some physical problems of Biomagnetic Fluid Dynamics (BFD)”, Department Mechanical Engineering, Technological Educational Institute of Western Macedonia, Kozani, Greece 22 February 2012 (as invited speaker during a scientific visit).
5. “Some physical problems of Biomagnetic Fluid Dynamics”, Department of Mathematics, University of Ioannina, Ioannina, Greece, 13 February 2013 (talk at the weekly series of seminars of the department).
6. “Biomagnetic fluids”, Department of Mathematics, University of Patras, Greece, 27 September 2014 (invited speaker at the 2nd Meeting “Applications of Differential Equations” organized by the School of D.E and Applications “P. Sifarakas”).
7. “Mathematical formulation and solution technique of Biomagnetic Fluid flow in an aneurism”, Talks as a visiting professor in the framework of “Erasmus plus” program, Faculty of Mechanical Engineering, Institute of Mathematics, Brno, Czech Republic, September 4–7, 2017.
8. Scientific visit in the framework of “Erasmus plus” program, Talks as a visiting professor in the framework of “Erasmus plus” program, Faculty of Mechanical Engineering, Faculty of Mechanical Engineering, Institute of Mathematics, Brno, Czech Republic, April 10–13, 2018.

### **13 Scientific Referee –Reviews – Assessments**

- Evaluator “Support of postdoctoral researchers” – B – cycle 2019, Greek State Foundation of Scholarships .
- Evaluator of research projects “support of research with emphasis to new researchers” EDBM34, ESPA 2014–2020.
- Evaluator of research projects (FONDECYT Regular Competition 2022) for the National Research and Development Agency of Chile.
- Assessment for the promotion to full professor of Dr. Fenuga, Olugbenga John, Department of Mathematics, University of Lagos, Akoka, Lagos State, Nigeria.

- Examiner of the PhD Thesis of Md. Jashim Uddin “A Study of Pulsatile Flow Phenomena with Computational Fluid Dynamics Approach”, Department of Applied Mathematics, University of Dhaka, Bangladesh.
- Reviewer for the Mathematical Reviews of the American Mathematical Society. Reviewer number: 45722.
- Referee for the following scientific international journals::
  1. Acta Mechanica
  2. Advances in Difference Equations
  3. AIP Advances
  4. American Journal of Computational and Applied Mathematics
  5. Biomechanics and Modeling in Mechanobiology
  6. Canadian Journal of Physics (2 articles)
  7. Cardiovascular Engineering and Technology
  8. Chemical Engineering Communications
  9. Chinese Journal of Physics (2 articles)
  10. Communications in Numerical Methods in Engineering
  11. Computers & Fluids
  12. Computer Methods and Programs in Biomedicine (2 articles)
  13. Dynamics of Continuous, Discrete & Impulsive Systems, Series B
  14. Energies
  15. Entropy
  16. Heat and Mass Transfer of the Latin American Applied Research (LAAR) (2 articles)
  17. Heliyon (3 articles)
  18. Indian Journal of Pure and Applied Mathematics
  19. International Journal for Computational Methods in Engineering Science & Mechanics
  20. International Journal for Multiscale Computational Engineering
  21. International Journal for Numerical Methods in Biomedical Engineering (2 articles)
  22. International Journal for Numerical Methods in Heat and Fluid Flow
  23. International Journal of Applied Mechanics (2 articles)
  24. International Journal of Applied and Computational Mathematics (IACM)

25. International Journal of Computational Fluid Dynamics (3 articles)
26. International Journal of Heat and Fluid Flow
27. International Journal of Heat and Mass Transfer
28. International Journal of Mathematics and Mathematical Sciences
29. International Journal of Mechanical Sciences
30. International Journal of Molecular Sciences
31. International Journal of Thermal Sciences (2 articles)
32. Iranian Journal of Science and Technology Transactions of Mechanical Engineering
33. Journal of Advanced Research in Fluid Mechanics and Thermal Sciences
34. Journal of Applied and Computational Mechanics
35. Journal of Computational and Applied Mathematics (3 articles)
36. Journal of Fluid Mechanics (3 articles)
37. Journal of Heat Transfer (ASME) (4 articles)
38. Journal of Marine Science and Engineering
39. Journal of Mathematical Analysis and Applications
40. Journal of Magnetism and Magnetic Materials (6 articles)
41. Journal of Non-Newtonian Fluid Mechanics
42. Journal of Theoretical and Applied Mechanics
43. Korea Australia Rheology Journal
44. Mathematics (mdpi journal) (3 articles)
45. MECCANICA
46. Nanotechnology Reviews
47. Nature (Scientific Reports)
48. Nonlinear Analysis Series A: Theory, methods & Applications
49. Nonlinear Analysis: Modelling and Control (LANA)
50. Optimization and Engineering
51. Partial Differential Equations in Applied Mathematics
52. Polish Journal of Chemical Technology
53. Physica A (2 articles)
54. Physics of Fluids (7 articles)
55. Physics Letters A
56. Symmetry

57. Teknomekanik

58. The European Physical Journal

59. Zeitschrift für Angewandte Mathematik und Mechanik (ZAMM) (2 articles)