

MUHAMMAD FAROOQ



Qualification: PhD (Applied Mathematics)
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Present Institution: Assistant Professor of Mathematics, Room No. B1022-B26, Sheikh Taimur Academic Block-II, Department of Mathematics, University of Peshawar, 25120, Khyber Pakhtunkhwa, Pakistan.

Teaching Experience

05/04/2011 to Date	Assistant Professor of Mathematics Department of Mathematics, University of Peshawar, Khyber Pakhtunkhwa, Pakistan. Teaching different Mathematics courses to BS, MSc, MPhil & PhD classes.
08/11/2006 to 04/04/2011	Lecturer in Mathematics Department of Mathematics, University of Peshawar, Khyber Pakhtunkhwa, Pakistan.
24/01/2001 to 31/10/2006	Lecturer in Mathematics Nisar Shaheed Degree College Risalpur Cantt; Khyber Pakhtunkhwa, Pakistan. Teaching Mathematics to FSc & BSc classes.

National and International Professional Association

Editorial Membership

1. Member Editorial Board of International Journal of Advances in Engineering & Technology.
2. Member Editorial Board of International Journal of Scientific & Engineering Research.

Academics

09/11/2006 to 28/03/2011	PhD (Applied Mathematics), Department of Mathematical Sciences, University of Essex, UK. Thesis title: New Lanczos-type Algorithms and their Implementation
09/1998 to 08/1999	BEd, Institute of Education & Research, University of Peshawar. Study emphasis: Teaching of Mathematics, Teaching of Physics, Educational Psychology, School Organization, History of Education, Guidance and Counseling.
01/06/1996 to 13/05/1998	Master of Science (Mathematics), University of Peshawar, Khyber Pakhtunkhwa, Pakistan. Study emphasis: Group Theory, Linear algebra, Topological Space, Nonlinear Dynamics, Numerical Analysis, Complex analysis, Real analysis, Differential Equations, Mathematical Statistics.
December 1993 to August 1995	Bachelor of Science with Mathematics & Physics, Islamia College, Peshawar, Pakistan.

Research students: My Past & Present Research students:

A. MPhil

1. Saifullah (Graduated)
2. Latif Ahmad (Graduated)
3. Zakir Ullah (Graduated)
4. Naqib Ullah (Graduated)
5. Nisar Ahmad (Graduated)
6. Imran Khan (Graduated)
7. Lyba Masood (Graduated)
8. Aiysha Begum (Graduated)

B. PhD

1. Saif Ullah (Graduated)
2. Syed Azhar Ali Shah (Graduated)
3. Muhammad Farooq Khan (Graduated)
4. Younas Khan (Graduated)
5. Muhammad Bilal (PhD in progress)
6. Aiysha Begum (PhD in progress)

Research Publications (Journal Articles)

2025

1. Muhammad Bilal, Lioua Kolsi, Hijaz Ahmad, Hassan Ali Ghazwani, Nidhal Becheikh & Muhammad Farooq (2025), "Numerical study of gyrotactic microorganism's based fourth-grade hybrid nanofluid flow under the influence of thermal radiation over a riga plate", *Journal of Radiation Research and Applied Sciences*, 18 (3) 101826 <https://doi.org/10.1016/j.jrras.2025.101826>
2. Bilal, M. & Maiz, F. & Farooq, M. & Ahmad, H. & Nasrat, M. & Ghazwani, H. (2025), "Novel numerical and artificial neural computing with experimental validation towards unsteady micropolar nanofluid flow across a Riga plate", *Scientific Reports*, 15(759), <https://doi.org/10.1038/s41598-024-84480-3> (IF. 3.8).
3. Yu, F. & Khan, MY. & Riaz, MB. & Ullah, S. & Farooq, M. (2025), Assessing the global dynamics of Nipah infection under Vaccination and treatment: A novel computational modeling Approach, PLOS one, <https://doi.org/10.1371/journal.pone.0309360> (IF. 2.9).
4. Mengqi Xie, Muhammad Younas Khan, Saif ullah, Muhammad Farooq, Muhammad Bilal Riaz, Basem Al Alwan (2025), "Optimal Control Analysis for the Nipah infection with imperfect vaccination", *POLS One*, 20(4). <https://doi.org/10.1371/journal.pone.0317408>

2024

5. MY Khan, S Ullah, M. Farooq and A. Baseer Saqib, (2024), "Optimal Control Analysis for the Nipah infection with constant and time-varying Vaccination and treatment with real data application", *Scientific Reports*, 14, Article number: 17532. <https://www.nature.com/articles/s41598-024-68091-6> (IF. 3.8).
6. S. Ahmad, T. Hussain, A. Baseer Saqib, JM. Farhan and M. Farooq, (2024) "Killing vector fields of locally rotationally symmetric Bianchi type V spacetime", *Sci Rep* 14, 10239 (2024). <https://doi.org/10.1038/s41598-024-58560-3> (IF. 4.6).
7. AH. Ganie; M. Farooq; MK. Nasrat; et al, (2024), "Radiative Nanofluid Flow over a Slender Stretching Riga Plate under the Impact of Exponential heat Source/sink", *Open Physics*,

22(20240020) <https://doi.org/10.1515/phys-2024-0020> (IF. 1.9).

8. Bilal, M. & **Farooq, M.** & Ahmad, H. & Ullah, I. & Alam, MM. (2024) "Mathematical Simulation of Tangent Hyperbolic Nanofluid Flow Coupled with Homogenous/heterogeneous Chemical Reaction by using Levenberg-Marquardt back Propagation over a Riga plate" Journal of Thermal Analysis and Calorimetry, <https://doi.org/10.1007/s10973-024-13554-1> (IF. 3.0).
9. Muhammad Younas Khan, Saif Ullah, **Muhammad Farooq**, Muhammad Bilal Riaz, "Modeling the dynamics of dengue fever with double susceptibility and optimal control strategies", *Model. Earth Syst. Environ.* (2024). <https://doi.org/10.1007/s40808-024-02152-7> (IF. 2.7).

2023

10. R. Jan, S. Alyobi, M. Inc and **M. Farooq**, (2023), "A robust study of the transmission dynamics of malaria through non-local and non-singular kernel", in AIMS Mathematics, 8(4): 7618–7640. (IF. 2.739).

2021

11. MF Khan, H. Alrabaiah, S. Ullah, MA Khan, **M. Farooq**, Mustafa bin Mamat, M. Imran Asjad, (2021), "A new fractional model for vector-host disease with saturated treatment function via singular and non-singular operators", in Alexandria Engineering Journal, 60 (1), 629-645. (IF: 6.626).

2020

12. S. Ullah, MF Khan, SAA Shah, **M. Farooq**, MA Khan & Mustafa Bin Mamat, (2020), "Optimal control analysis of vector-host model with saturated treatment", in The European Physical Journal Plus, 135:839, 1-25. (IF. 3.758)
13. SAA Shah, MA Khan, **M. Farooq**, S. Ullah & E. O. Alzahrani, (2020), "A fractional order model for Hepatitis B virus with treatment via Atangana-Baleanu derivative" in Physica A: Statistical Mechanics and its Applications, 538(122636), 1-17. (IF. 3.778)
14. S. Ullah, M. A. Khan, **M. Farooq**, Z. Hammouch and D. Baleanu , (2020), "A fractional model for the dynamics of Tuberculosis infection using Caputo-Fabrizio derivative" , in Discrete and Continuous Dynamical Systems - Series S , 13(3), 975-993. (IF. 2.425)
15. S. Ullah, MA Khan, **M. Farooq** and E. O. Alzahrani, (2020), "A fractional model for the dynamics of tuberculosis (TB) using Atangana-Baleanu derivative", in Discrete & Continuous Dynamical Systems Series-S, 13(3), 937-956. (IF. 2.425)
16. S. Ullah, MA Khan, **M. Farooq**, T. Gul and F. Hussain, (2020), "A fractional order HBV model with hospitalization", in Discrete & Continuous Dynamical Systems Series-S, 13 (3), 957-974. (IF. 2.425)

17. MA Khan, SAA Shah, S Ullah, KO Okosun and **M Farooq**, (2020), "Optimal control analysis of the effect of treatment, isolation and vaccination on hepatitis B virus", in Journal of Biological Systems, 28(2), 351–376. (IF. 1.909)

2019

18. S. Ullah, MA Khan, **M. Farooq** & Taza Gul, (2019), "Modeling and analysis of Tuberculosis (TB) in Khyber Pakhtunkhwa Pakistan", in Mathematics and Computers in Simulation, 165, 181-199. (IF. 4.6)
19. MA Khan, M Ahmad, S Ullah, **M Farooq** & T Gul, (2019), "Modeling the transmission dynamics of tuberculosis in Khyber Pakhtunkhwa Pakistan", in Advances in Mechanical Engineering, 11 (6), 1-13. (IF. 1.9).
20. S. Ullah, MA Khan & **M. Farooq**, (2019), "Mathematical modelling of Hepatitis B infection with vaccination and optimal control interventions", in Journal of Computational Methods in Sciences and Engineering, 20(1), 331-349 (IF. 0.5)
21. S. Ullah, M. A. Khan and **M. Farooq**, (2019), "Mathematical Modelling Approach to Hepatitis B virus with Vaccination and optimal control", in International Journal of Ecology and developments, 34 (3), 69-81. (IF. 0.493)

2018

22. Ullah, MA Khan & **M. Farooq**, (2018), "A new fractional model for the dynamics of Hepatitis B virus using Caputo-Fabrizio derivative", in European Physical Journal Plus, 133, 1-14. (IF. 3.758)
23. Ullah, MA Khan & **M. Farooq**, (2018), "A fractional model for the dynamics of TB virus", in Chaos, Solitons & Fractals, 116, 63-71. (IF. 9.922)
24. MA Khan, S. Ullah, & **M. Farooq**, (2018), "A new fractional model for tuberculosis with relapse via Atangana-Baleanu derivative", in Chaos, Solitons & Fractals, 116, 227-238. (IF. 9.922)
25. Ullah, MA Khan, **M. Farooq**, (2018), "Modeling and analysis of fractional HBV model with Atangana-Baleanu derivative", in Eur. Phys. J. Plus, 133, 1-18. (IF. 3.758)
26. MSA Khan, S. Abdullah, MY Ali, I. Hussain and **M. Farooq**, (2018), "Extension of TOPSIS method based on Choquet integral under interval-valued Pythagorean fuzzy environment", in Journal of Intelligent and Fuzzy Systems, 34 (1), 267-282. (IF. 2.0)

2015-11:

27. Z. Ullah, **M. Farooq** and A. Salhi, (2015)", A19/B6: A new Lanczos-type algorithm and its implementation", in Journal of Prime Research in Mathematics, 10(1), 106 - 122. (IF. 0.238).
28. **M. Farooq** and A. Salhi, (2014), "A Switching Approach to avoid Breakdown in Lanczos-type Algorithms", in Applied Mathematics & Information Sciences, 2014, 8(5), 2161-2169. (IF. 0.258).
29. **M. Farooq** and A. Salhi, (2013), "A Preemptive Restarting Approach to Beating the Inherent Instability of Lanczos-type Algorithms", in Iranian Journal of Science & Technology, Transaction A- Science, 2013, 37(3.1), 349 – 358. (IF. 1.553).
30. S. Ullah, **M. Farooq** and A. Salhi, (2013), "An alternative derivation of a new Lanczos-type algorithm for system of linear equations", in Punjab University Journal of Mathematics, 45, 39-49.
31. **M. Farooq** and A. Salhi, (2012), "New Recurrence Relationships between Orthogonal Polynomials which Lead to New Lanczos-type Algorithms", in Journal of Prime Research in Mathematics, 8, 61-75. (IF. 0.238).
32. **M. Farooq** and A. Salhi, (2011), "Improving the Solvability of Ill-conditioned Systems of Linear Equations by Reducing the Condition Number of their Matrices", in J. Korean Math. Soc. 48 (5), 939 – 952. (IF. 0.531).

Awards

Faculty Development Scholarship for PhD at the University of Essex, UK by Higher Education Commission, Islamabad, Pakistan.

International Assignment/Reviewer

- i. Computational and Mathematical Methods, Hindawi
- ii. Computational and Mathematical Methods in Medicine, Hindawi
- iii. Journal of Mathematics, Hindawi
- iv. Neural Computing and Applications, Springer
- v. Computer Methods in Biomechanics and Biomedical Engineering, Taylor & Francis
- vi. Frontiers in Public Health
- vii. Symmetry, MDPI
- viii. Fractal and Fractional, MDPI
- ix. African Journal of Mathematics and Computer Science Research

Internal roles:

Since April 2011, I have undertaken a number of roles within the Department of Mathematics, University of Peshawar, these are briefly summarized as:

1. Looking after the Department in the absence of Head of Department (During official visits abroad or inland)
2. Member Syndicate, University of Peshawar
3. Member Senate, University of Peshawar
4. Member Academic Council, University of Peshawar
5. Focal Person for the University of Peshawar [Green Campus Initiative](#)
6. Coordinator MSc Program
7. Member Departmental Graduate Studies Committee
8. Member of the Departmental Admission Committee
9. In-charge students' affairs
10. Member of Departmental Financial Committee
11. Member of Departmental Board of Studies

External role(s): In addition to editorial, refereeing and assessment duties, I have also undertaken the following roles in different universities:

1. Member Board of Studies, Department of Mathematics, **Khushal Khan Khattak University, Karak, Khyber Pakhtunkhwa, Pakistan.**
2. Member of the Graduate Studies Committee, **Electronics Department, University of Peshawar, Khyber Pakhtunkhwa, Pakistan.**
3. Member Board of Studies, **Department of Mathematics, Abdul Wali Khan University, Mardan, Khyber Pakhtunkhwa, Pakistan.**
4. Member of the Graduate Studies Committee, **Department of Mathematics, Abdul Wali Khan University, Mardan, Khyber Pakhtunkhwa, Pakistan.**
5. Member Advanced Studies & Research Board, **Benazir Shaheed Women University (formerly known as Frontier Women University), Peshawar, Khyber Pakhtunkhwa, Pakistan.**
6. Member of the Graduate Studies Committee, Department of Mathematics, **Khushal Khan Khattak University, Karak, Khyber Pakhtunkhwa, Pakistan.**
7. Member of the Graduate Studies Committee, Department of Mathematics, **University of Swabi, Khyber Pakhtunkhwa, Pakistan.**
8. Member Board of Studies, Department of Mathematics, **University of Swabi, Khyber Pakhtunkhwa, Pakistan.**
9. Member of **National Curriculum Review Committee, Higher Education Commission, Islamabad.**

Sports

Cricket and Table Tennis.

Languages

English (Fluent in writing, speaking, and reading), Urdu (Fluent in writing, speaking, and reading), Arabic (Basic), Pashtu (Mother's tongue)

References

1). Dr. Abdellah Salhi

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Professor,

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