

Name: Dr. Ghaus ur Rahman
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University of Swat, KP
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❖ EDUCATION

1. **M. Phil. Leading to Ph. D** in Mathematics: Abdus Salam School of Mathematical Sciences, Government College University, Lahore Pakistan 28th Sep 2009 to 5th May 2014 (Marks: 1871/2200, 85%).

MAJOR SUBJECTS STUDIED IN M. PHIL LEADING TO Ph. D Program:

Algebra I, Algebra II, Geometry I, Geometry II, Linear Algebra, Mathematical Analysis I, Mathematical Analysis II, Complex Analysis, Potential Theory, Number Theory, Introduction to Manifolds, Calculus on Manifolds, Functional Analysis, Ordinary Differential Equations, Partial Differential Equations, Fourier Analysis, Brain Dynamics, Dynamical System, Convex Analysis, Stochastic Process, Probability theory, Potential Theory

Thesis Title: Fractional Differential Equations in Non-reflexive Banach Spaces

Supervisor: Prof. Dr. Vasili Lupulescu (lupulescu_v@yahoo.com)

Affiliations of Supervisor:

- I. Constantin Brâncuși University of Targu Jiu, **Romania**,
- II. Abdus Salam School of Mathematical Sciences, Government College University, Lahore **Pakistan**

2. **M.Sc. (Mathematics, 2007)**

University of the Malakand, KPK, Pakistan; (Marks: 957/1100, 87%)

MAJOR SUBJECTS

Real Analysis, Complex Analysis, Group theory, Linear Algebra, Topology C- Language, Functional Analysis, Numerical Analysis, Mathematical Statistics, Differential Geometry, Ring theory

3. B. Sc.: (Math's A, Math's B, Computer Science, 2005)

University of the Malakand, KPK, Pakistan; (Marks: 379/550, 69%)

4. F. Sc.: (Physics, Chemistry, Biology and Mathematics (Additional), 2001)

Government Postgraduate Jahanzeb college Saidu Sharif, Swat, KPK, Pakistan

(Marks: 675/1100, 61%)

5. Secondary School Certificate: (Science Group)

Government High School No: 1 Mingora Swat, KPK, Pakistan; (Marks: 566/850, 66%)

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❖ **GRE MATHEMATICS INTERNATIONAL**

GRE International subject, Mathematics qualified with 55 percentile (Conducted by ETS, USA)

❖ **ACADEMIC INTEREST`S**

I. MAJOR FIELD: Mathematics

II. DOMAINS OF RESEARCH

Analysis, Qualitative and Quantitative Behavior of Differential Equations in Abstract Spaces, Dynamical Systems, Mathematical Biology, Stochastic Differential Equations and their Applications

❖ **Distinction**

Gold Medalist, M.Sc., University of Malakand, KPK, Pakistan, Session 2005-2007

❖ **Awards**

I. **Performance Based Increments:** Awarded two performance-based increments for the year, 2019-2020, by syndicate University of Swat, vide letter no: UoS/Meeting/37-SYND/2021-09, dated: April 29, 2021

II. **Abdus Salam School of Mathematical Sciences internal stipend** for entire program 28th - September 2009 to 5th May 2014.

III. **Indigenous Scholarship:** Awarded by HEC, for PhD studies, 2011-2014

IV. **Best Young Speaker award**, 6th World Conference on 21st Century Mathematics, 2013, held at Abdus Salam School of Mathematical Sciences, GC University Lahore, Pakistan from February 6-10, 2013.

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❖ **LIST OF RESEARCH PAPERS PUBLISHED IN 2023:**

1. Abdullah, S. Ahmad, **Ghaus ur Rahman**, A. Ali, F. Qayum, Agitation of SARS-CoV-2 disease (COVID-19) using ABC fractional-order modified SEIR model, **Mathematical Methods in Applied Sciences**, **2023**; 1–16, DOI: 10.1002/mma.9229, **Q-1 Journal**, **Impact Factor. 3.007**
2. S. Hussaina, O. Tunç, **Ghaus ur Rahman**, H. Khan, E. Nadia, Mathematical Analysis of Stochastic Epidemic Model of MERS-Corona & Application of Ergodic Theory, **Mathematics and Computers in Simulation**, 207 (2023) 130–150, **Q-1 Journal**, **Impact Factor. 3.601**
3. I. Ahmad, S. Ahmad, **Ghaus ur Rahman**, S. Ahmad and W. Weera, Controllability and Observability Analysis of a Fractional-Order Neutral Pantograph System, **Symmetry**, **2023**, 15, 125. DOI: 10.3390/sym15010125, **Impact Factor: 2.94**

❖ **LIST OF RESEARCH PAPERS PUBLISHED IN 2022:**

4. I. Ahamd, **Ghaus ur Rahman**, S. Ahmad, and M. De la Sen, Controllability and Observability Results of an Implicit Type Fractional Order Delay Dynamical System, **Mathematics** **2022**, 10, 4466. <https://doi.org/10.3390/math10234466>, **Q1-W-Category**, **Impact Factor: 2.592**
5. Kamal Shah, Israr Ahmad, Juan J. Nieto, **Ghaus Ur Rahman**, Thabet Abdeljawad, Qualitative Investigation of Nonlinear Fractional Coupled Pantograph Impulsive Differential Equations, **Qualitative Theory of Dynamical Systems (2022)** 21:131, **Impact Factor: 0.931**
6. Asma, **Ghaus ur Rahman**, J. F. Gómez-Aguilar, Mubeen Akhtar, J. Torres-Jiménez Study of Multi-Term Pantograph Differential Equations of Arbitrary Order, **Few-Body System (2022)** 63:71, **Impact Factor: 1.844**
7. Ravi P. Agarwal, **Ghaus ur Rahman**, Muhsina, Mathematical analysis of impulsive fractional differential inclusion of pantograph type, **Mathematical Methods in Applied Sciences**, 1–39, **2022**, DOI: 10.1002/mma.8675, **Q-1 Journal**, **Impact Factor. 3.007**
8. Xuhui Li, Ravi P. Agarwal, J.F. Gómez-Aguilar, Qaisar Badshah, **Ghaus ur Rahman**, Threshold dynamics: Formulation, stability & sensitivity analysis of co-abuse model of heroin and smoking, **Chaos, Solitons and Fractals**, 161 (2022) 112373, **Q-1 Journal**, **Impact Factor: 9.97**
9. Dildar Ahmad, Ravi P. Agarwal, and **Ghaus ur Rahman**, Formulation; Solution's Existence, and Stability Analysis for Multi-Term System of Fractional-Order Differential Equations, **Symmetry** **2022**, 14, 1342. DOI: <https://doi.org/10.3390/sym14071342>, **Q-1 Journal**, **Impact Factor: 2.7**
10. Z. Zhang, **Ghaus ur Rahman**, J.F. Gómez-Aguilar, J. Torres-Jiménez, Dynamical aspects of a delayed epidemic model with subdivision of susceptible population and control

strategies, (2022), 112194, **DOI:** <https://doi.org/10.1016/j.chaos.2022.112194> **Q-1 Journal, Impact Factor: 9.97**

11. A. Ali, K. Shah, D. Ahmad, **Ghaus ur Rahman**, et al., Study of multi term delay fractional order impulsive differential equation using fixed point approach, **AIMS Mathematics**, 7(7): 11551–11580. DOI: 10.3934/math.2022644, **Impact Factor: 2.01**
12. **Ghaus ur Rahman**, R.P. Agarwal, D. Ahmad, Existence and stability analysis of nth order multi term fractional delay differential equation, **Chaos, Solitons and Fractals**, 155 (2022) 111709. **Q-1 Journal, Impact Factor: 5.922**
13. I. Ahmad, **Ghaus ur Rahman**, S. Ahmad, N.A. Alshehri, S.K. Alagan, Controllability of a damped a nonlinear fractional order integrodifferential systems with input delay, **Alexandria Engineering Journal**, (2022) 61, 1956–1966, **Q-1 Journal, Impact Factor: 6.626**

❖ **LIST OF RESEARCH PAPERS PUBLISHED IN 2021:**

14. D. Ahmad, A. Ali, I. Mahriq, **Ghaus ur Rahman**, K. Shah, Investigation of nonlinear fractional delay differential equation via singular fractional operator, **International Journal of Nonlinear Sciences and Numerical Simulation**, (2021), <https://doi.org/10.1515/ijnsns-2021-0150>. **Impact Factor: 2.0**
15. Hussam Alrabaiah, Israr Ahmad, Kamal Shah, Ibrahim Mahariq, **Ghaus Ur Rahman**, Analytical solution of non-linear fractional order Swift-Hohenberg equations, **Ain Shams Engineering Journal**, (2021), DOI: <https://doi.org/10.1016/j.asej.2020.11.019>, **Q-1 Journal, Impact Factor: 4.79**
16. M Aslam, JF Gómez-Aguilar, **Ghaus Ur Rahman**, R Murtaza, Existence, uniqueness, and Hyers-Ulam stability of solutions to nonlinear ρ -Laplacian singular delay fractional boundary value problems, **Mathematical Methods in the Applied Sciences**, (2021) DOI: <https://doi.org/10.1002/mma.7608>, **Q-1 Journal, Impact Factor: 3.007**
17. Amjad Ali, Kamal Shah, Hussam Alrabaiah, Zahir Shah, **Ghaus Ur Rahman**, Saeed Islam, Computational modeling and theoretical analysis of nonlinear fractional order prey-predator system, **Fractals**, (2021) DOI: <https://doi.org/10.1142/S0218348X21500018> **Existence and**

stability for fractional order pantograph equations with nonlocal conditions **Q-1 Journal**, **Impact Factor: 4.5, Volume: 29(01)**.

18. Asma, J.F. Gómez-Aguilar, **Ghaus ur Rahman**, M. Javaid, Stability analysis for fractional order implicate ψ -Hilfer differential equations, **Mathematical Methods in Applied Sciences**, (2021), DOI: 10.1002/mma.7948. **Q-1 Journal, Impact Factor: 3.007**
19. Z. Zhang, **Ghaus ur Rahman**, K.S. Nisar, R.P. Agarwal, Incorporating convex incidence rate and public awareness program in modelling drinking abuse and novel control strategies with time delay, **Physica Scripta**, 96 (2021) 114006, <https://doi.org/10.1088/1402-4896/ac14df> , **Q-1 Journal, Impact Factor: 3.081**[Study of Multi-Term Pantograph Differential Equations of Arbitrary Order](https://doi.org/10.1088/1402-4896/ac14df)
20. Q. Badshah, K.S. Nisar, **Ghaus ur Rahman**, R.P. Agarwal, S. Islam, Stochastic modeling of within host dynamics of HCV model under therapy, **Results in Physics**, Vol. 22 (2021) 103826. **Q-1 Journal, Impact Factor: 4.474**
21. I. Ahmad, T. Abdeljawad, I. Mahariq, K. Shah, N. Mlaiki, **Ghaus ur Rahman**, Iterative analysis of non-linear Swift–Hohenberg equations under nonsingular fractional order derivative, **Results in Physics**, 23 (2021) 104080. **Q-1 Journal, Impact Factor: 4.47**
22. M. Aslam, J.F. Gómez-Aguilar, **Ghaus ur Rahman**, R.M. Existence, uniqueness, and Hyers–Ulam stability of solutions to nonlinear p-Laplacian singular delay fractional boundary value problems, **Mathematical Methods in Applied Sciences**, DOI: 10.1002/mma.7608, (2021). **Q-1 Journal, Impact Factor: 4.47**
23. M. Aslam, R. Murtaza, T. Abdeljawad, **Ghaus ur Rahman**, A. Khan, H. Khan and H. Gulzar, A fractional order HIV/AIDS epidemic model with Mittag-Leffler kernel, **Advances in Difference Equations**, (2021) 2021:107 <https://doi.org/10.1186/s13662-021-03264-5> **Q-1 Journal, Impact Factor: 2.421**
24. Abdullah, S. Ahmad, **Ghaus ur Rahman**, Impact of Pangolin Bootleg Market on the Dynamics of COVID-19 Model, **Results in Physics**, 23, (2021), 103913, doi.org/10.1016/j.rinp.2021.103913, **Q-1 Journal, Impact Factor: 4.47**

25. G. Ali, K. Shah, **Ghaus ur Rahman**, Investigating a class of Pantograph differential equations under multi-points boundary conditions with fractional order, **International Journal of Applied and Computational Mathematics**, 7(1), (2021), **Q-1 Journal, Impact Factor: 4.47**
26. I. Ahmad, J.J. Nieto, **Ghaus ur Rahman**, K. Shah, I. Mushtaq, On coupled nonlinear evolution system of fractional order with a proportional delay, **Mathematical Methods in Applied Sciences**, On coupled nonlinear evolution system of fractional order with a proportional delay (2021), **Q-1 Journal**, <https://doi.org/10.1002/mma.7427>, **Q-1 Journal, Impact Factor: 4.47**
27. **Ghaus ur Rahman**, R.P. Agarwal, Q. Badshah, S. Islam, Ergodicity & Dynamical Aspects of a Stochastic Childhood Disease Model, **Mathematics and Computers in Simulation**, 182 (2021) 738–764, **Q-1 Journal**, , **Impact Factor: 3.601**
28. G. Ali, K. Shah, **Ghaus ur Rahman**, Investigating a Class of Pantograph Differential Equations Under Multi-points Boundary Conditions with Fractional Order, *Int. J. Appl. Comput. Math.* (2021) 7:2 <https://doi.org/10.1007/s40819-020-00932-0>

❖ **LIST OF RESEARCH PAPERS PUBLISHED IN 2020:**

29. I. Ahmad, J.J. Nieto, **Ghaus ur Rahman**, K. Shah, Existence and stability for fractional order pantograph equations with nonlocal conditions, **Electronic Journal of Differential Equations**, (2020), No. 132, pp. 1(16), ISSN: 1072-6691. URL: <http://ejde.math.txstate.edu> or <http://ejde.math.unt.edu> Q-1 Category
30. G. Ali, K. Shah, and **Ghaus ur Rahman**, Existence of solution to a class of fractional delay differential equation under multi-points boundary conditions, **Arab Journal of Basic and Applied Sciences**, 2020, Vol. 27, NO. 1, 471–479, <https://doi.org/10.1080/25765299.2020.1850621>
31. **Ghaus ur Rahman**, F.Z. Mostefai, Existence Theory and Topological Aspects of the Solution Set of Integrodifferential Equations, **International Journal of Difference Equations**, Volume 15, Number 2, pp. 511–530 (2020) <http://campus.mst.edu/ijde>

32. **Ghaus ur Rahman**, S. Ahmad, F. Haq, Application of Topological Degree Method in Quantitative Behavior of Fractional Differential Equations, **Filomat** Vol. 34(2) (2020), 421–432. <https://doi.org/10.2298/FIL2002421R> **Q-1 Journal**
33. Faizullah, **Ghaus ur Rahman** et al. A note on the approximate solutions for stochastic differential equations driven by G-brownian motion, **J. Computational Analysis and Applications**, 28, No.5, 2020, Copyright 2020 Eudoxus Press, Ll
34. H. Alrabaiah, I. Ahmad, K. Shah, **Ghaus ur Rahman**, Qualitative analysis of nonlinear-coupled pantograph differential equations of fractional order with integral boundary conditions, **Boundary Value Problem**, 2020, 138 (2020). <https://doi.org/10.1186/s13661-020-01432-2>, IF= 1.06, Q1 Category Journal
35. Z. Zhang, J. Zou, R. K. Upadhyay, **Ghaus ur Rahman**, An Epidemic model with multiple delays for the propagation of worms in wireless sensor networks, **Results in Physics**, (2020), doi: <https://doi.org/10.1016/j.rinp.2020.103424>, IF= 4.06, Q1 Category Journal
36. Z. Zhang, **Ghaus ur Rahman**, R.P. Agarwal, Harmonic mean type dynamics of a delayed giving up smoking model and optimal control strategy via legislation, **Journal of Franklin Institute**, 357(2020), 10669-10690, Impact Factor: 4. 4, Q1 Category Journal
37. **Ghaus ur Rahman**, A. Yildirim, F. Haq, Emile F.D. Goufo, Dynamics of an SAIQR influenza model of fractional order via convex incidence rate, **International Journal of Modeling, Simulation and Scientific Computing**, (2020) 2050033 (13 pages).
38. Q. Badshah, **Ghaus ur Rahman**, R.P. Agarwal, S. Islam, F. Jan, Applications of ergodic theory and dynamical aspects of stochastic hepatitis-c model, **Dynamic Systems and Applications**, 29 (2020) 139-181. Impact Factor: 0.55
39. **Ghaus ur Rahman**, H. Alrabaiah, I. Ahmad, K. Shah, Qualitative analysis of nonlinear coupled pantograph differential equations of fractional order with integral boundary conditions, **Boundary Value Problems**, (2020) 2020:138, Impact factor: 1. 794, Q 1 Category Journal.
40. Fazal Haq, Muhammad Akram, Kamal Shah, **Ghaus ur Rahman**, Study of new monotone iterative technique for a class of arbitrary order differential equations, **Computational Method for Differential Equations**, (2020), Vol. 8, No. 4, 2020, pp. 639-647, DOI: DOI:10.22034/cmde.2020.29957.1442

41. F Faizullah, R Ullah, Jihen Majdoubi, I Tlili, I Khan, **Ghaus ur Rahman**, A note on approximate solutions for stochastic differential equations driven by G-Brownian Motion, **Journal of Computational Analysis & Applications**, Vol. 28, No. 5, 2020
42. **Ghaus ur Rahman** et al., On existence and stability results to a class of boundary value problems under Mittag-Leffler power law, **Advances in Difference Equations**, (2020) 2020:407, Impact factor: 2. 421, Q1 Category Journal
43. I. Ahmad, K. Shah, **Ghaus ur Rahman**, D. Baleanu, Stability analysis for a nonlinear coupled system of fractional hybrid delay differential equations, **Mathematical Methods in Applied Sciences**, 2020; 1-14. <https://doi.org/10.1002/mma.6526> Impact Factor: 1.2, Q1 Category Journal

❖ **LIST OF RESEARCH PAPERS PUBLISHED IN 2019:**

44. Asma, **Ghaus ur Rahman**, K. Shah, Mathematical Analysis of Implicit Impulsive Switched Coupled Evolution Equations, **Results in Mathematics**, DOI: 10.1007/s00025-019-1066-z. (2019) (**Impact factor: 0.9**) Q-2 Category Journal.
45. **Ghaus ur Rahman**, Ravi P. Agarwal, Q. Din, Mathematical analysis of giving up smoking model via harmonic mean type incidence rate, **Applied Mathematics and Computation**, 354(1) (2019), 128-148, **Impact Factor. 3.472**
46. Sarah Sarfaraz, Naveed Ahmad, **Ghaus ur Rahman**, Study of nonlinear Pachpatte's inequalities on time scales, **Advance in Difference Equations**, **Impact Factor: 1.0, volume 2019**, Article number: 402 (2019), DOI: 10.1186/s13662-019-2333-8
47. R.P. Agarwal, Q. Badshah, **Ghaus ur Rahman**, Saeed Islam, Optimal Control & Dynamical Aspects of a Stochastic Pine Wilt Disease Model, **Journal of the Franklin Institute**, 356 (2019) 3991–4025. (Impact factor: 3. 5) Q-1 Category Journal.

❖ **LIST OF RESEARCH PAPERS PUBLISHED IN 2018:**

48. **Ghaus ur Rahman**, Existence Results for Weak Solution of Multi-term Fractional Differential Equations in Abstract Spaces, **Bulletin of Mathematical Analysis and Applications**, <http://www.bmathaa.org> Volume 10 Issue 1(2018), Pages 38-54. (ISI-Master list verified)

49. N. Ahmad, H. Ashraf, **Ghaus ur Rahman**, M.S. Saleem, Sobolev's Embedding on Time Scales, **Journal of Inequalities and Applications**, (2018) 2018:134. (Impact factor: 0.791) Q-3 Category Journal.
50. **Ghaus ur Rahman**, K. Shah, F. Haq, N. Ahmad, Host vector dynamics of pine wilt disease model with convex incidence rate, **Chaos, Solitons and Fractals**, 113 (2018) 31–39. (Impact factor: 1.455) Q-1 Category Journal.
51. **Ghaus ur Rahman**, R.P. Agarwal, L. Liu and A. Khan, Threshold dynamics and optimal control of an aged structured giving up smoking model, **Journal of Nonlinear Analysis: Real World Applications**, 43 (2018) 96–120 (Impact factor: 1.695) Q-1 Category Journal.
52. **Ghaus ur Rahman**, Ravi P Agarwal, Lili Liu, Asaf Khan, Threshold dynamics and Optimal Control of an age-structured giving up smoking model, **Nonlinear Analysis: Real World Applications**, (2018), Volume 43, pages 96-120, DOI: <https://doi.org/10.1016/j.nonrwa.2018.02.006>
53. Naveed Ahmad, Zeeshan Ali, Kamal Shah, Akbar Zada, **Ghaus ur Rahman**, Analysis of Implicit Type Nonlinear Dynamics Problem of Impulsive Fractional Differential Equations, **Complexity**, Volume (2018), Article ID 6423974, 15 pages, DOI: <https://doi.org/10.1155/2018/6423974> (Impact factor: 4. 621) Q-1 Category Journal.
54. N. Ahmed, Z. Ali, K. Shah, A. Zada and **Ghaus ur Rahman**, Analysis of implicit type nonlinear dynamical problem of impulsive fractional differential equations, **Complexity**, Volume 2018, Article ID 8918541, 8 pages <https://doi.org/10.1155/2018/8918541>, (Impact factor: 4. 621) Q-1 Category Journal.
55. **Ghaus ur Rahman**, Y. Li, F. Haq, K. Shah, M. Shahzad, Computational Analysis of Complex Population Dynamical Model with Arbitrary Order, **Complexity**, Volume 2018, Article ID 8918541, 8 pages <https://doi.org/10.1155/2018/8918541> (Impact factor: 4. 621) Q-1 Category Journal.
56. **Ghaus ur Rahman**, Q. Din, F. Faizullah, F. M. Khan, Qualitative Behavior of a Second-Order Fuzzy Difference Equation, **Journal of Intelligent & Fuzzy System (JIFS)**, 34 (2018) 745–753 DOI:10.3233/JIFS-17922, (Impact factor: 1.261), Q-1 Category Journal.

❖ **LIST OF RESEARCH PAPERS PUBLISHED IN 2017:**

57. **Ghaus ur Rahman**, Y. Li, F. Haq, K. Shah, M. Shahzad, Numerical Analysis Of Fractional Order Pine Wilt Disease Model With Bilinear Incident Rate, **Journal of Mathematics and Computer Science**, 17 (2017), 420–428, ISI-Journal
58. **Ghaus ur Rahman**, F. Haq, K. Shah, M. Shahzad, Coupled system of non-local boundary value problems of nonlinear fractional order differential equations, **Journal of Mathematical Analysis**, Volume 8 Issue 2 (2017), Pages 51-63. ISI-Journal
59. **Ghaus ur Rahman**, F. Faizullah, Existence and Stability of Solutions to Non-linear Neutral Stochastic Functional Differential Equations in the Framework of G-Brownian Motion, **Advance in Difference Equations**, (2017) 2017:350 DOI 10.1186/s13662-017-1400-2 (Impact factor: 0.335) Q-1 Category Journal.
60. **Ghaus ur Rahman**, F. Haq, K. Shah, Muhammad Shahzad, Hyers–Ulam Stability to a Class of Fractional Differential Equations with Boundary Conditions, **International Journal of Applied and Computational Mathematics**,(2017) DOI:10.1007/s40819-017-0406-5. <https://link.springer.com/article/10.1007/s40819-017-0406-5>
61. Fazal Haq, Kamal Shah, Asaf Khan, Muhammad Shahzad, **Ghaus Ur Rahman**, Numerical solution of fractional order epidemic model of a vector born disease by laplace adomian decomposition method, **Punjab University Journal of Mathematics**,(2017),Vol. 49(2)(2017) pp. 13-22.
62. **Ghaus ur Rahman**, F. Haq, S. Muhammad, M. Shahzad, H.A. Wahab, Numerical Analysis of Fractional Order Epidemic Model of Childhood disease Model, **Discrete Dynamics in Nature and Society**, Volume 2017, Article ID 4057089, 7 pages <https://doi.org/10.1155/2017/4057089> (Impact factor: 0.711) Q-3 Category Journal.
63. Fazal Haq, Kamal Shah, **Ghaus-UR Rahman**, Muhammad Shahzad, Numerical Analysis of Fractional order model of HIV-1 Infection of CD4+ T-cells, **Computational Methods for Differential Equations**,(2017),Volume 5, Pages 1-11
64. **Ghaus ur Rahman**, F. Haq, K. Shah, M. Shahzad, Numerical solution of fractional order smoking model via Laplace Adomian decomposition method, **Alexandria Engineering Journal**. <https://doi.org/10.1016/j.aej.2017.02.015>. ISI-Journal, Q-1 Category Journal.

❖ **LIST OF RESEARCH PAPERS PUBLISHED IN 2016:**

65. **Ghaus ur Rahman**, R.P. Agarwal, V. Lupulescu, D. O'Regan, Weak solutions for fractional differential equations in non-reflexive Banach spaces via Riemann-Pettis integrals, **Mathematische Nachrichten**, [doi/10.1002/mana.201400010/full](https://doi.org/10.1002/mana.201400010/full), (**Impact factor: 0.688**), **Q-1 Category Journal**.
66. **Ghaus ur Rahman**, T. Fayyaz, N. Irshad, A. R. Khan, G. Roqia, Generalized Inequalities on time scale, **Journal of Inequalities and Applications**. 2016, DOI: 10.1186/s13660-016-1170-5, (**Impact factor: 0.791**), **Q-3 Category Journal**.
67. Muhammad Shahzad, Faisal Sultan, Abdul Wahab, Faiz Faizullah, **Ghaus Ur Rahman**, Slow Manifolds in Chemical Kinetics, **Journal of the Chemical Society of Pakistan** . **Oct2016**, Vol. 38 Issue 5, p828-835. 8p.
68. F Haq, K Shah, **Ghaus Ur Rahman**, M Shehzad, Existence and Uniqueness of positive solution to boundary value problem of fractional differential equations, **Sindh University Research Journal-SURJ (Science series) 2016**, Volume 48, Issue 2.
- ❖ **LIST OF RESEARCH PAPERS PUBLISHED IN 2015:**
69. **Ghaus ur Rahman**, R.P. Agarwal, V. Lupulescu, D. O' Regan, Nonlinear Fractional differential equations in non-reflexive Banach Spaces and fractional calculus, **Advances in Difference Equations** 2015 (1), 1-18, (Impact factor: 0. 335) **Q-2 Category Journal**.
70. **Ghaus ur Rahman**, R.P. Agarwal, V. Lupulescu, D. O' Regan, Fractional calculus and fractional differential equations in non-reflexive Banach spaces, **Communications in Nonlinear Science and Numerical Simulation**, 20(1), (2015), 59-73, (**Impact factor: 2. 784**), **Q-1 Category Journal**
71. **Ghaus ur Rahman**, Umber Abbas Hashmi, V. Lupulescu, Uncertain Dynamic System on Time Scales, **Journal of Uncertain Systems Vol.9, No.1, pp.17-30, 2015**
72. **Ghaus ur Rahman**, Amir Khan, Gul Zaman, Hydromagnetic Flow near a Non-uniform Accelerating Plate in the presence of Magnetic Field Through Porous Medium, **Journal of Porous Medium** 2015, Volume 18, Issue 8, pages: 745-762,
- ❖ **LIST OF RESEARCH PAPERS PUBLISHED IN 2014:**

73. **Ghaus ur Rahman**, V. Lupulescu, D. O' Regan, Existences and Uniqueness of Random Fractional Differential Equations, **Opuscula Mathematica**. 34, no. 4, (2014), 813–825, <http://www.opuscula.agh.edu.pl/om-vol34iss4art12> Q-2 Category Journal.
74. **Ghaus ur Rahman**, A. Younus, Controllability, Observability and Stability of a Volterra integro-dynamic system on time scales, **Journal of Dynamical and Control Systems** (2014) 20:383–402 DOI 10.1007/s10883-014-9226-7. (Impact factor: 0.56), Q-2: Category Journal.
- ❖ **LIST OF RESEARCH PAPERS PUBLISHED IN 2013:**
75. **Ghaus ur Rahman**, R.P. Agarwal, V. Lupulescu, D. O' Regan, Multi-term Fractional Differential Equations in a non-reflexive Banach Space, **Advances in Difference Equations**, 302: 2013, (Impact factor: 0.335) Q-2 Category Journal.

Submitted and Accepted Papers: 25

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❖ **Collaborations with Professors from Foreign Universities**

USA, Turkey, Spain, Romania, Ireland, Norway, UAE, KAS, China, India, South Africa, Vietnam, Mexico

❖ **Collaborations with Professors from Pakistani Universities**

COMSATS University, Institute of Business Administration (IBA) Karachi, NUST Islamabad, University of Peshawar, University of Malakand, Hazara University, Abdul Wali Khan University (AUKUM), University of Karachi, University of Poonch Rawlakot (AJK)

Total Q-1 Category journals= 26

Total Q-2 Category journals= 13

Total Q-3 Category journals=8

Total Citation till March 2023= 854 (H-index=17 and i10-index=23)

Total Impact factor till 2023= 160. 85

❖ **CONFERENCES/ SEMINARS/COLLOQUIMS/ WORKSHOPS**

1. **Keynote Speaker:** International Conference on Mathematical Modeling and Scientific Computing for Industrial Research, Abdus Salam School of Mathematical Sciences, Government College University Lahore, Pakistan 7-8, November, 2022
2. CIMPA School, Mathematical Modeling of Ecosystem, Butuan, **Philippines**, 22 August-2nd September 2022
3. **Keynote Speaker** in International Conference on Mathematical Sciences, March 28-29, 2022, Islamia University of Bahawalpur, Punjab, **Pakistan**
4. **Keynote Speaker** in 2nd National Conference on Mathematical Sciences 6-7 December 2021, University of Malakand, KP **Pakistan**
5. **Invited Speaker** in Two days National Conference, “Latest Trends in Mathematical Modeling & Simulation, 14-15, 2021”, Abdus Salam School of Mathematical Sciences, GCU Lahore, **Pakistan**
6. CIMPA School on, Recent Advances in Dynamical System, November 08-19, 2021 COMSATS Lahore, **Pakistan**
7. CIMPA Research School, Mathematical Biology, 17-27th June 2019, Kathmandu, **Nepal**
8. CIMPA Research School, Stochastic Analysis and Applications, 1-9 March 2019, Saida, **Algeria**.
9. **As Speaker.** The Mediterranean International Conference of Pure and Applied Mathematics and Related Areas, October 26-29, 2018 **Antalya Turkey**.
10. CIMPA Research School, Recent developments in stochastic differential equations, 05/03/2018 to 18/03/2018, **Hanoi Vietnam**.
11. **As Invited Speaker**—First Winter Workshop, Abdus Salam School of Mathematical Sciences, GCU Lahore **Pakistan**, 26-30 December 2017.
12. CIMPA Research School, Functional Analysis and Partial Differential Equations, **Khovd Mongolia**, 17th July to 28th July 2017.
13. **As Speaker**--National Conference on Mathematical Sciences, IIUI, Islamabad, **Pakistan**, 27-28 April 2017
14. **As Speaker**--Recent Advances in Mathematical Methods, Models & Application 9-10 April, 2017 at Lahore School of Economics, Center for Mathematics and Statistical Sciences, Lahore **Pakistan**
15. As Participant--Recent Advances in Mathematical Methods, Models & Application 7-8 April, 2016 at Lahore School of Economics, Center for Mathematics and Statistical Sciences, Lahore **Pakistan**

16. As Participant-- “Lecture on Continued fractions: Introduction and applications.” By Professor Dr. Michel Waldschmidt, at ASSMS Government College University Lahore, Friday, November 20, 2015
17. CIMPA Research School Nepal, Aspects of Dynamical System, **Kathmandu Nepal**, 3-16 November, 2014
18. **As Speaker**--1st National Conference on Mathematics Sciences, University Of Malakand, KPK, **Pakistan** 2-4 September 2014
19. **As Speaker**--6th World Conference on 21st Century Mathematics, 2013, held at Abdus Salam School of Mathematical Sciences, GC University Lahore, Pakistan from February 6-10, 2013.
20. Attended, Lectures series delivered by Professor Dr. Pierre Cartier Chairman, Scientific Committee Professor, Institut des Hautes Etudes Scienfiques, France (At Abdus Salam School of Mathematical Sciences, GC University Lahore, Pakistan March 2013)
21. Attended a Lecture delivered by Professor Dr. Stefano Luzzatto, An introduction to Dynamical system 2013
22. As Participant--5th World Conference on 21st Century Mathematics, 2011, held at Abdus Salam School of Mathematical Sciences, GC University Lahore, Pakistan from February 9-13, 2011.
23. As Participant--In the seminar series on “Geometric Measure Theory” delivered by Prof Dr. Franks Morgan (Vice President of American Mathematical Society) held at Abdus Salam School of Mathematical Sciences from April 2–8, 2011.
24. As Participant--An Expository Workshop on Number Theory and Allied Areas in Mathematics held at, Abdus Salam School of Mathematical Sciences, Lahore, Pakistan September 26 -30, 2011
25. As Participant--One Day Undergraduate Conference on Mathematics 2009” November 16, 2009, held at Abdus Salam School of Mathematical sciences, GC University Lahore, Pakistan

❖ **Seminar/Conference/Workshop/School Organized:**

1. **As Chief Organizer:** Organized 2st Summer School, New Trends in Mathematical Sciences, 18-22 July 2022 in collaboration with CASPAM, BZU Multan.
2. **As Chief Organizer:** Organized 1st Summer School, New Trends in Mathematical Sciences, 9-13 August 2021 in collaboration with CASPAM, BZU Multan.
3. **As Chief Organizer:** Organized one day seminar titled, "Introduction to Mathematical Modeling " November 2019. Guest Speaker: Prof. Dr. Shamsul Qamar, Chairperson COMSATS University Islamabad.

❖ **Research Projects:**

1. Nature of the Project: Start up Research Grant HEC, Islamabad
Funding Agency: Higher Education Commission of Pakistan Project Name: Existence Results for Weak solution of Multi-term Fractional Differential Equations via Riemann Pettis and Henstock Kurzweil Integrals Role: Principal Investigator

❖ **Theses/Projects Supervision:**

1. Muhammad Aslam, PhD scholar, Department of Mathematics, Mohi-ud-din Islamic University, Islamabad, Pakistan, **Degree Awarded 2023**
2. Atta ur Rahman, **MPhil scholar**, Allama Iqbal Open University, Islamabad, Numerical Solution of Epidemic Models With Adomian Decomposition Method. **Degree Awarded, 2018**
3. Dildar Ahmad, **MPhil scholar**, Department of Mathematics and Statistics, University of Swat, KP Pakistan, **Degree Awarded, 2023**
4. Iqbal Hussain, **MPhil scholar**, Department of Mathematics and Statistics, University of Swat, KP Pakistan, **Degree Awarded, 2023**
5. Mohsina, **MPhil scholar**, Department of Mathematics and Statistics, University of Swat, KP Pakistan, **Degree Awarded, 2023**
6. Fazal Haq, **PhD scholar** Hazara University Mahsehra, KPK Pakistan Existence Theory and Numerical Solution of Fractional Order Mathematical models by Laplace Adomian Decomposition Method. **Degree Awarded 2017**
7. Qasair Badshah, **PhD scholar**, Abdul Wali Khan University Mardan, KP Pakistan **Degree Awarded 2021.**

8. Israr Ahmad, **PhD scholar**, Malakand University Chakdara Lower Dir, KP Pakistan **Degree Awarded, 2019**
9. Gohar Ali, **PhD scholar**, Malakand University Chakdara Lower Dir, KP Pakistan **Degree Awarded, 2019**
10. **12- MPhil Scholars are presently working under my supervision, University of Swat.**
11. Rahim Uddin, University of Swat, **M. Sc. Project**, Global Analysis of SEIR Epidemic Model with Non-Monotonic Incidence Rate (M. Sc. Degree Awarded)
12. Masood Shah: University of Swat, **M. Sc Project**, and Applications of Convex Analysis in Mathematical Modeling.
13. Hedayat Ullah, University of Swat, **BS Project**, Vector Valued Integral and It's Applications in Differential Equations. (Degree Completed)
14. Said Ahmad: University of Swat, **BS Project**, Fractional Order Differential Equations and Generalized Stability Analysis
15. Shahid Ali Khan, Saharaf Ali: University of Swat, **BS Project**, Study of Topological Degree Theory & Its Applications in Fractional Differential Equations.

<u>PhD Scholars Supervised:</u>	5
<u>MPhil Scholars Supervised:</u>	5
<u>MPhil Scholars under Supervision:</u>	10(Twelve)
<u>BS & M.Sc. Supervised:</u>	25(Twenty Five)

❖ **Administrative Experience:**

1. **Chairman**, Department of Mathematics & Statistics, University of Swat, KP since 12th April 2021.
2. **In Charge**, Department of Mathematics & Statistics, University of Swat, KP From 15th March 2017 to 11th April 2021.
3. **Convener**: Academic Audit Committee, University of Swat, March 2023 to date
4. **Convener**: Conducted 2nd, 3rd and 4th Board of Studies, Department of Mathematics and Statistics, University of Swat, KP Pakistan
5. **Convener**: Graduate Studies Committee, Department of Mathematics and Statistics, University of Swat, KP Pakistan June 2020-June 2022

6. **Convener:** Graduate Studies Committee, Department of Mathematics and Statistics, University of Swat, KP Pakistan, April 2023-April 2025

❖ **Teaching Experience:**

1. Lecturer (1st February 2007 to 26th September 2009), Government Postgraduate Jahanzeb College Saidu Sharif, Swat, KPK Pakistan
2. Assistant Professor (From 15/07/2014 to date) Department of Mathematics and Statistics University of Swat, KPK, Pakistan
3. Associate Professor (From 12th April, 2021 to date) Department of Mathematics and Statistics University of Swat, KPK, Pakistan

Pre-PhD Teaching and Research experience= 1 year

Post PhD Teaching and Research experience= 8 Years

Total experience: = 9 years

❖ **Professional Membership**

- **Member:** Board of Studies Center of Earth and Space Sciences, University of Swat, KP Pakistan, March 2023-March 2026
- **Member:** Graduate Studies Committee, Department of Applied Physical and Space Sciences, University of Swat, KP Pakistan, March 2023-March 2025
- **Semester Coordinator** for BS-Mathematics and M. Sc. (Mathematics) from September 2014 to 18 May 2017.
- **Member Academic Council**, University of Swat, April, 2021 to date
- **Member Board of Faculty:** Biological Sciences, Physical and Numerical Sciences, University of Swat, April 2021-2024
- **Member**, Ethical Institutional Review Board, University of Swat, No. UoS/Estt/749, date 07-07-2022
- **Member DTRC**, Women University AJK, Pakistan
- **Member** Faculty of Biological/Physical & Numerical Sciences, USwat, KP
- **Member** National Mathematical Society
- **Member** Board of Studies, Department of Mathematics, Hazara University Manshera, KP, 2015-2019

- **Member Board** of Studies, Center for Chemical Science, University of Swat, KP
- **Member** Graduate Studies Committee, Department of Computer Science and Software Engineering, University of Swat, KP, 2020-2022

❖ REFERENCES:

- Prof. Dr. Ravi P. Agarwal (Ravi.Agarwal@tamuk.edu), Professor Department of Mathematics, Texas A & M University-Kingsville, Kingsville, TX, USA
- Prof. Dr. Vasile Lupulescu (lupulescu_v@yahoo.com) Professor Faculty; “Constantin Brâncusi” University of Targu Jiu, Romania (**PhD Supervisor**)