Curriculum Vitae

Dr. Gul Zaman

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0.1 Objective

I want to work on **Higher Education Management** to strengthen academics, promote research cultures and facilitate researchers to enable them to utilize their skills and expertise for the uplift of the nation. My areas of interest in research are **Mathematical Biology and Fluid Mechanics** such as mathematical model of heart and blood circulation in human body, population dynamics, mathematical epidemiology and infectious diseases with optimal control, and ecological modeling. Moreover, I am highly appreciative of any research activity in other areas of applied Mathematics. I believe that applied Mathematics is tool-builder, therefore I would like to learn and use applied Mathematics which is applicable to a broad diversity of many research fields and useful in daily life.

0.2 Personal

Father's Name:	Abbas Khan
Qualification:	Ph.D (Applied Mathematics)
Date of birth:	05-04-1973
Nationality:	Pakistani
Address:	Dir Timargara, Khyber Pakhtunkhwa

0.3 Current Position

Vice Chancellor
University of Malakand, Chakdara Dir
Khyber Pakhtunkhwa, Pakistan

0.4 Academics

- **Ph.D** (Applied Mathematics) (2008)
  Department of Mathematics, Pusan National University, Pusan, South Korea Dissertation title**"Blood Flow of Oldroyd-B Type Fluids Induced by Brownian Force in a Vessel"**.

- **M.S** (M.Phil Mathematics)(2006)
  Department of Mathematics, Konkuk University, Seoul, South Korea
  Dissertation title**"Stability Analysis of Spruce Budworm Population and Optimal Control"**.

- **M.Sc.** (Mathematics) (1997)
  Department of Mathematics, Gomal University, Dera Ismail Khan, Pakistan.

- **B.Sc.** (Maths A, B and Physics) (1995)
  University of Peshawar, Pakistan.

0.5 Theoretical Knowledge

Numerical Analysis 1,2
Complex Analysis 1,2,3
Differential Equations
Algebra 1,2
Partial Differential Equations
Bio-Mathematics
Real Analysis
Mathematical Method
Mathematical Modeling
Dynamics & Optimization
Numerical Integration
Control Theory
Non Linear Analysis
Computational Mathematics

0.6 Computer Skills

MATLAB
Fortran77
LATEX
TEX
Microsoft Word processing
Graphics (Power Point)
Data bases (BIDS and internet sites)
Well Experience of using E-mail and Internet

0.7 Current Research Project

1. Project Title: **The transmission dynamics of Hepatitis and its optimal control**
   Position: **Principal Investigator**

Period of Execution: 3 Years (2014-2017 Completed)
Total Cost: Rs. 2.1 Million (PKR).

2. Project Title:**The study of hepatitis B epidemic models using stochastic differential equation**
Position: **Principal Investigator**
Period of Execution: 1 Year (Submitted to HED, KPK)
Total Cost: Rs3.2 Million (PKR).

3. Project Title: **Dynamical aspects and control theory of the novel Corona virus disease via age-structured modeling in the Kingdom of Saudi Arabia** joint project with Professor Ali Aszal Shomrani, King Abdul Aziz University, the Kingdom of Saudi Arabia.

4. Project Title: **Mathematical analysis and control theory of the novel Corona virus via age-structured modelling**
Position: **Principal Investigator**
Period of Execution: 6 Months (submitted to HEC).

5. Project Title:**Mathematical Modeling and Control of HIV/AIDS) equation**
Position: **Principal Investigator**
Period of Execution: 1 Year (Submitted to HEC)
Total Cost: Rs7.2 Million (PKR).

5. Smoking Epidemic (in process)

6. Modeling of Real World Issues (Working on research proposal)

0.8 Subject Taught

1. Applied Dimensional Analysis and Modeling
2. Mathematical Modeling
3. Introduction to Mathematical Biology
4. Computational Mathematics
5. Hydrodynamics & Differential Equations

6. Optimization Theory
7. Differential Equations
8. Numerical Analysis

0.9 Research Scholars Supervised

0.9.1 Ph.D Supervision

1. Abid Ali Lashari Ph.D from CAMP-NUST (Degree awarded, 2012) dissertation entitled Mathematical Models of Vector Born Disease and Optimal Control.

2. Roman Ullah Ph.D from AWKUM (Degree awarded, 2013) dissertation entitled Mathematical Modeling and Optimal Control of Some Infectious Diseases.

3. Anwar Zeb Ph.D from UOM (Degree awarded, 2014) dissertation entitled Dynamical behavior and optimal control of smoking model in fractional order.

4. Amir Khan Ph.D from UOM (Degree awarded 2015) dissertation entitled Fractional Order Generalized Fluid Flow Models: An Analytical Approach.

5. Muhammad Zamir Ph.D from UOM (Degree awarded, 2017) Mathematical Analysis of Control Strategies for elimination of Leishmaniasis.

6. Nagir Ali Ph.D from UOM dissertation entitled Mathematical Analysis and Control Strategies of HIV-1 Infection Models (Degree awarded, 2017)

7. Tahir Khan Ph.D from UOM dissertation entitled The Mathematical Study of Hepatitis B Epidemic Models: Analysis and Control, (Degree awarded, 2019, HEC funded)

8. Asaf Khan Ph.D Scholar UOM (Research in progress)

9. Ibrar Ullah Ph.D Scholar UOM (Research in progress)
10. Ghulam Hussain Ph.D Scholar UOM (Research in progress)
11. Ms. Bibi Fatima Ph.D Scholar UOM (Research in progress)
12. Sajjad Ali Khan Ph.D ScholarUOM (Research in progress)
13. Muhammad Naeem Jan Ph.D Scholar UOM (Research in progress)
14. Zakir Ullah Ph.D Scholar UOM (Research in progress)

0.9.2 MS/ M.Phil Supervision

1. Ms. Samreen Sharif M.Phil from CAMP-NUST (Degree awarded, 2010) dissertation entitled Mathematical Models of Infectious Diseases and Role of Optimal Control.
2. Muhammad Altaf Khan M.Phil, Islamia College University Peshawar, dissertation entitled dynamical interaction between leptospirosis infected vector and human population (Degree awarded, 2012)
3. Ibrar Ullah M.Phil from UOM (Degree awarded, 2014)
   dissertation entitled Asymptotic Behavior of Giving Up Smoking Model
4. Sajjad Ali Khan M.Phil from UOM (Degree awarded, 2014)
   dissertation entitled Stability Analysis of an Epidemic Model with Different Incidence Rates
5. Zia ud Din M.Phil from UOM (Degree awarded, 2014)
   dissertation entitled Numerical Solution of Oldrod-B Fluid in a Blood Vessel
6. Ghulam Hussain M.Phil from UOM (Degree awarded, 2014)
   dissertation entitled Optimal Control in Epidemic Model with Time Delay
7. Anweruddin M.Phil from UOM (Degree awarded, 2014)
   dissertation entitled Stability Analysis of HIV Epidemic Model

8. Ms. Bibi Fatima M.Phil from UOM (Degree awarded, 2015)
dissertation entitled The effect of migration on Hepatitis-B model

9. Same Ullah M.Phil from UOM (Degree awarded, 2015)
dissertation entitled Stability Analysis of SIR and SEIR Epidemic Models

10. Ms. Nalia M.Phil from UOM (Degree awarded 2016)
Dynamical Behavior of Fractional Order HIV/AIDS epidemic Model

11. Haider Ali Khan M.Phil from UOM (Degree awarded 2016)
Modeling and Analysis of Communicable Diseases with Nonlinear Incidence Rates

12. Abdullah M.Phil from UOM (Degree awarded 2016)
dissertation entitled Analysis of vector-borne diseases with vertical and horizontal transmission in host population

13. Ms. Shamza Nawab M.Phil from UOM (Degree awarded 2017)
Modeling and the effect of multiple controls strategies on different Hepatitis B infected individuals

14. Muhammad Naeem Jan M.Phil (Degree awarded 2018, HEC funded)
Mathematical Modeling of HBV and HCV Co-Infection with Optimal Control

15. Zakir Ullah M.Phil from UOM (Degree awarded 2018, HEC funded)
LIE Group Analysis of MHD Tangent Hyperbolic Fluid Toward a Stretching Sheet Slip Conditions

16. Muhammad Wasim M.Phil (Degree awarded 2018, HEC funded)
A Co-Infection Modeling of the Hepatitis B and C

17. Muhammad Ibrahim M.Phil from UOM (Degree awarded 2019)
Stability Analysis and Optimal Control of Hepatitis B Epidemic Model with Saturated Incidence Rate

18. Muhammad Tariq M.Phil from UOM (Degree awarded 2019)
The Effect of Activation Energy on the Erromagnetic Maxwell Nanofluid

19. Aurang Zeb (Thesis Submitted 2020)
    The Dynamics of Of Hepatitis B Epidemic Model Under Preventive Vaccination and Treatment

20. Syed Saifullah (Research in progress 2020)
    Modeling of the fractional avian influenza model with Atanga-Baleanu derivative

21. Waqas Ahmad (Research in progress 2020)
    Modeling and Control of Acute and Chronic Hepatitis B with the effect of media Coverage

22. Javid Khan (Research in progress 2020)

0.10 Research Interest

1. Model Formulation and Analysis of Infectious Diseases
2. Predator-Prey Population and Mathematical Modeling
3. Fluid Dynamics (Blood flow in a vessel and mathematical modeling)
4. Optimal Control Theory and Applications
5. Homotopy Perturbation Method
6. Stability Analysis and Computational Modeling
7. Applications of ODE, PDE and Fractional Differential Equations

0.11 Membership of Academic Bodies

1. American Mathematical Scoiety (AMS)

2. Board of Studies Department of Mathematics, Abdul Wali Khan University Mardan

3. Member of Academic Council University of Malakand

4. Korean Mathematical Society (KMS)

5. Society for Industrial and Applied Mathematics (SIAM)
6. Korean Society for Mathematical Biology (KSMB)
7. Member of Academic Council Abdul Wali Khan University Mardan
8. Korean Society for Industrial and Applied Mathematics (KSIAM)
9. Member as Approved Expert of Committee of Courses (CC) Allama Iqbal Open University, Islamabad
10. Board of Faculty Abdul Wali Khan University Mardan
11. Board of Faculty Gomal University D.I. Khan
12. House Allotment Committee University of Malakand
13. Board of Studies Department of Mathematics, Islamia College University, Peshawar
14. Board of Studies Department of Mathematics, Abbotabad University of Science and Technology, Abbotabad
15. Antiplagriausm Standing Committee UOM
16. Member of Selection Board SBBU Sheringal Upper Dir KPK
17. Member of Senate University of Swat KPK
18. Advanced Studies & Research Board (ASRB) University of Malakand

0.12 Professional Skills and Participation

1. KISAM work shop Seoul National University, Summer 2005, South Korea
2. Pusan-Komamoto work shop on Mathematics Feb 2007 in Japan
3. Pusan-Kyung Sang Mathematical Society in June 2007 South Korea

4. Participate as a speaker in the 6th International Conference on Industrial and Applied Mathematics (ICIAM) 2007 in Switzerland

5. Participate as a speaker in the International Conference on Mathematical Biology (ICMB) 2007 in Malaysia

6. KSMB 2nd meeting October 2007 in KAIST, South Korea

7. KISAM work shop in South Korea 2008

8. Participate as an Organizer and speaker in the 6th International Conference on Scientific Computing and Applications (SCA) June 2008, Pusan South Korea

9. Participate as a speaker in the 12th Asian Congress of Fluid Mechanics in KAIST South Korea

10. Participate as a speaker in the 2008 Global KMS International Conference in Jeju, South Korea.

11. Focal Person (Organizer) of Ist National Conference on Mathematical Science 2-4th Sep. 2014, University of Malakand (Funded HEC).

12. Participate in the Indigenous On-Campus Training Workshop of Administrative Staff on "Good Governance", University of Malakand, November 17-21, 2014, Organized by QEC, HEC Islamabad.

13. Participate in the Two days work shop on "Strategic Management", February 5-6, 2015, organized by British Council & HEC in Islamabad.

14. Participate in the one days work shop on "Research Proposal for Post-Doctorial Fellowship", December 17, 2015, organized by ORIC (UOM) & HEC in Islamabad.

15. Participate in the three days training work shop for administrative staff on "Good Governance", 27-29 April 2015, organized by Quality Enchantment Cell (UOM) & HEC in UOM.

16. Focal Person (Organizer) of one day workshop on Mathematics 13 Dec. 2016, University of Malakand (Funded ORIC).

17. Participate in the one days work shop on "Ph.D Supervision", May 20, 2017, organized by HEC in Islamabad.

18. Malakand-Japan Conference on Mathematical Sciences, 3-5 March 2020, University of Malakand, Patron-in-Chief of the Conference.

0.13 Academic Managerial Reforms

- Developed Strategy Plan 2019- 20125 for University of Malakand
- Syllabus
- Designed Online Policy in COVID19
- Approved Master Plan for University of Malakand
- Curriculum Review Committee
- Modification BS-4 Yrs and M.Phil/Ph.D Syllabus
- Design and implement M.Sc Mathematics semester system in UOM
- Developed 2% Special People Recruitment Policy for All Universities From the Supreme Court of Pakistan

0.14 Awards

1. First Research Cash Award in Physical and Numerical Sciences- 2018
2. RESEARCH PRODUCTIVITY AWARD - 2015 by Pakistan Council for Science & Technology
3. RESEARCH PRODUCTIVITY AWARD - 2013 by Pakistan Council for Science & Technology
4. RESEARCH PRODUCTIVITY AWARD - 2012 by Pakistan Council for Science & Technology

5. Best University Teacher Award 2011 by Higher Education Commission Islamabad

6. Best Teacher for Spring Semester 2009, National University of Science & Technology (NUST) Islamabad

7. First Position in Ph.D Course Work obtained 100% marks PNU South Korea

0.15 Presentations and Talks/Public Lectures

1. **Stability Analysis in the Nonlinear Spruce Budworm Population Model,** Pusan-Komamoto work shop on Mathematical analysis and its application 3-4 Feb 2007 Japan.

2. **The blood flow in vessel with compressible diameter approach by an Oldroyd-B fluid,** Pusan-Kyung Sang Mathematical society work shop 2nd June 2007 in Kyung Sang University Pusan, South Korea.

3. **Stability techniques in the SIR epidemic model,** 6th International Congress on Industrial and applied Mathematics 16-20 July 2007, in Zurich Switzerland.

4. **The effect of constant yield harvesting analysis in the spruce budworm population dynamics,** International conference on mathematical biology $4-6th$, September 2007, Kualalumpur Malaysia.

5. **Optimal Vaccination and Treatment in the SIR Model**, in KISAM on 23-24th November 2007, South Korea.

6. **Control in the Smoking Dynamics**, in The 1st Young-Nam Young Mathematician Conference 28-29th March 2008, PNU Korea.

7. **Steady Oldroyd-B fluid in a blood vessel**, the Korean Mathematical Society 25-26th April 2008, Keung Meung University, South Korea.

8. **A Mathematical Study of Human Blood Flow in a Vessel**, Mathematics Colloquium for Junior Mathematicians May second 2008, PNU Korea.

9. **Mathematical Modeling in Biology**, Center for Advanced Mathematics and Physics 7th July 2008, NUST, Pakistan.

10. **The Influence of the Orientation Stress Tensor on the Blood Flow in a Vessel**, the 12th Asian Congress of Fluid Mechanics 18-21 August 2008, Daejeon, Korea.

11. **Optimal Control of communicable diseases and prevention of epidemics**, Mathematics Colloquium for Junior Mathematicians August 2008, PNU Korea.

12. **Optimal vaccination of communicable diseases**, Global KMS International Conference 2008, Jeju Korea.

13. **Stability and control in a predator population**, International Bhurban Conference on Applied Sciences & Technology, Jan. 2009, Islamabad Pakistan.

14. **Stability and optimal control in epidemic models**, Conference on Recent Advances in Mathematical Methods, Models & Applications, April 18-19th 2009, LUMS Lahore, Pakistan.

15. **Stability and optimal control in epidemic models**, The 10th International Conference on Nonlinear Functional Analysis and Applications July 27-31 2009, Kyungnam University South Korea.

16. **Blood flow in a vessel with numerical simulations**, Intensive Work shop on Mathematical Models in Biology, 21-23th July 2009 South Korea.

17. **Optimal treatment in smoking dynamics**, Conference on Recent Advances in Mathematical Methods, Models Applications, April 17-18th 2010, LUMS Lahore, Pakistan.

18. **Dynamics of human blood in a vessel and orientation stress tensor**, The International Conference on Frustrated Spins Systems, Cold Atoms, Nanomaterials, July 14-16th 2010, Hanoi, Vietnam.

19. **Dynamical behavior and control of communicable diseases** 24th August 2011, Pusan National University, South Korea.

20. **Dynamical behavior and optimal control of vector born diseases** 21st June 2012, National Institute for Mathematical Sciences, South Korea.

21. **Blood Flow Induced by Brownian Force in a Vessel**, IWMMS 3rd International Workshop on Material Modeling and Simulation 3 - 6 July 2013, University of Malakand, Pakistan.

22. **Some Mathematical Models in Biology and Optimal Control**, Symposium held on 12 - 13 May 2014, COMSATS Institute of IT, Abbottabad, Pakistan.

23. **Epidemic model of hepatitis B with vaccination,** CASM International Conference on Differential Equations and Applications, May 26 - 28, 2016, LUMS, Pakistan.

24. **Dynamics and control of double delayed HIV-1 infection model,** Two Days International Conference on Causes and Consequences of HIV/AIDS in Rural and Urban Communities of Pakistan on 05-06 April 2017 Under HEC thematic research projection University of Malakand.

25. **Asymptotic Analysis and Optimal Control Strategies of Infectious Diseases**, 3rd National Conference of Mathematics Sciences, 27-28 April, 2017, Islamic International University, Islamabad.

26. **Optimal Control of Giving up Smoking Model With Age-Structured in Smoking Classes**, 6rd International Conference on Control and Optimization With Industrial Applications (COIA-2018), 11-13 July, 2018, Baku, Azerbaijan.

0.16 Invited Talks

1. **The Non-Newtonian Blood Flow in Vessel with the Configuration of Brownian Force**, the 25th PNU-POSTECH Algebraic Combinatorics Seminar May 3, 2008, POSTECH Korea.

2. **Stability analysis and optimal control in communicable diseases**, COMSATS, May 4, 2009, Islamabad Pakistan.

3. **Dynamical behavior of infectious disease and role of optimal control theory,** 09 International Workshop on Nonlinear PDE and Applications 29 June 2nd July Pusan National University South Korea.

4. **Some Mathematical Models in Biology** Summer Intensive Lecturers Program for Mathematical Biology 17-20th July 2011, Pusan National University South Korea.

5. **Summer School for UG students,** 28 June-2nd July 2011, Department of Mathematics PNU, South Korea.

6. **Annual Meeting of Korean Society for Mathematical Biology** , Modeling Dynamical Interactions Between Leptospirosis Infected Vector and Human Population, 25-26 August 2011, UNIST South Korea.

7. **China-Japan-Korea Mathematical Biology Conference**, Dynamical interactions and control of Leptospirosis infected vector and human population, 22-25 June 2012, PNU South Korea.

8. **Dynamical Behavior & Optimal Control of Vector Born Diseases,** Department of Mathematics and Electrical Engineering, City University of Science & Information Technology, 20th October 2012, Peshawar, Pakistan.

9. **Invited by Chairman Department of Mathematics, King Saud University**, Kingdom of Saudi Arab to discuss joint research, 14 April 2015 to 27 April 2015.

10. **Mathematical Modeling and Optimal Control Strategies for Some Infectious Diseases**, King Saud University, Kingdom of Saudi Arab, April 20, 2015.

11. **Blood Flow Induced by Brownian Force in a Vessel**, King Saud University, Kingdom of Saudi Arab, April 22, 2015.

12. **Mathematical Modeling and Optimal Control Strategies for Some Infectious Diseases**, Department of Mathematics, College of Science Al-Zulfi, Majmahh University, Kingdom of Saudi Arab, April 27, 2015.

13. **Transmission Dynamics and Optimal Control Strategies of Infectious Diseases**, Department of Mathematics, Faculty of Science, King Abdul Aziz University, Kingdom of Saudi Arab, April 29, 2015.

14. **Dynamical behavior of vector born diseases and multiple control strategies**, International Workshop on Nonlinear Analysis and Applications, University of Management Technology (UMT), Lahore, Pakistan, October 1- 3, 2016.

15. **Mathematical models of infectious diseases and multiple control strategies**, Workshop on Soft Computing and Their Applications, Kohat University of Science & Technology, Kohat Pakistan, October 25-26,2016.

16. **Spreading dynamic of vector borne diseases and multiple control strategies,** Department of Mathematic, 24 May 2017, GC University, Lahore Pakistan.

17. **Mathematical Modeling and Control of Smoking Epidemic in a Community**, two days workshop on Modeling, Simulation and Optimization, Kohat University of Science & Technology, Kohat Pakistan, April 19-20,2017.

18. **Mathematical Model of Blood Circulation in Human Body Induced by Brownian Force**, International Conference on Applied Mathematics, 22-25 May 2017, LUMS, Lahore, Pakistan.

19. **Mathematical analysis of communicable diseases and multiple control strategies**, 3rd International Conference of Pure and Applied Mathematics, 9-10 Nov. 2017, Sarghoda University, Punjab Pakistan.

20. **Dynamical behavior of vector born disease and role of optimal control strategies,** International Conference on Applied Mathematics, 13-15 Nov. 2017, GC University, Lahore Pakistan.

0.17 Publications

0.17.1 Published

1. Anwar Zeb, Ebraheem Alzahrani, Vedat Suat ERTURK and Gul Zaman, Mathematical model for corona virus disease 2019 (COVID-19) containing isolation class, BioMed Research International ID 3452402, 2020 IF:2.197.

2. Zakir Ullah, Gul Zaman and Anuar Ishak. Magnetohydrodynamic tangent hyperbolic fluid flow past a stretching sheet. Chinese Journal of Physics, 2020. IF:2.544.

3. Zainul Abadin Zafar, Nigar Ali, Zahir Shah, Gul Zaman, Prosun Roy, Wejdan Deebani, Hopf Bifurcation and Global Dynamics of Time Delayed Dengue Model, Computer Methods and Programs in Biomedicine, Volume 195, October 2020, 105530 IF:3.424.

4. Zainul Abadin Zafar, Nigar Ali, Zahir Shah, Gul Zaman, Analysis and optimal control problem of HIV-1 model of engineered virus, Alexandria Engineering Journal, Available online 15 May 2020, IF:3.696.

5. Muhammad Naeem Jan, Nigar Ali, Gul Zaman, Imtiaz Ahmad, Poom Kumam, HIV-1 infection dynamics and optimal control with Crowley-Martin function response, Computer Methods and Programs in Biomedicine, Vol. 193, Article 105503, (2020). IF:3.424.

6. Nigar Ali, Muhammad Ikhlaq Chohan, Sajjad Ali, Gul Zaman. Analysis of optimal control problem of HIV-1 model of engineered

virus, International Journal of Advanced and Applied Sciences, 6(5) 2019, Pages: 44-49.

7. Muhammad Tahir, Gul Zaman, Syed Inayat Ali Shah, Sher Muhammad, Syed Asif Hussain and Mohammad Ishaq. The stability analysis and control transmission of mathematical model for Ebola Virus, Open J. Math. Anal. 2019, 3(2), 91-102, IF:0.0.
8. Nigar Ali, Muhammad Ikhlaq Chohan, Gul Zaman. Optimal control of a time delayed HIV-1 infection model, European Journal of Pure and Applied Mathematics 12 (2), (2019) 506-518.
9. Muhammad Naeem Jan, Gul Zaman, Tahir Khan. Analytical Approximate Solution of Hepatitis B Epidemic Model Comparison with Vaccination, Punjab University Journal of Mathematics (ISSN 1016-2526) Vol. 51(12)(2019) pp. 53-69.
10. Muhammad Tahir, Syed Inayat Ali Shah, Gul Zaman, Tahir Khan. Stability Behaviour of Mathematical Model MERS Corona Virus Spread in Population, Filomat 33:12 (2019), 3947-3960 IF:0.789.
11. Tahir Khan, Aly R. Seadawyy, Gul Zaman and Abdullah Abdullah. Optimal control of the mathematical viral dynamic model of different hepatitis B infected individuals with numerical simulation, International Journal of Modern Physics B Vol. 33, No. 26 (2019) 1950310 (23 pages) IF:1.153.
12. Tahir Khan, Saeed Ahmad and Gul Zaman. Modeling and qualitative analysis of a hepatitis B epidemic model, Chaos: An Interdisciplinary Journal of Nonlinear Science 29, 103139 (2019) IF:2.6.
13. Rukhsar Ikram, Amir Khan, Asaf Khan, Tahir Khan, Gul Zaman. Analytical approximate solution of leptospirosis epidemic model with standard incidence rate, Computational Methods for Differential Equations, Vol.7, No. 3, 2019, pp. 370-382.
14. Muhammad Tahir, Syed Inayat Ali Shah and Gul Zaman. Prevention strategy for super infection mathematical model tuberculosis and HIV associated with AIDS, Tahir et al., Cogent Mathematics & Statistics (2019), 6: 1637166 IF:0.00.

15. Tahir Khan, Zakir Ullah, Nigar Ali and Gul Zaman. Modeling and control of the hepatitis B virus spreading using an epidemic model. Chaos Solitons & Fractals 124 (2019): 1-9. IF:3.064.

16. Tahir Khan, II Hyo Jung and Gul Zaman. A stochastic model for the transmission dynamics of hepatitis B virus. Journal of Biological Dynamics 13, no. 1 (2019): 328-344. IF:1.642.

17. Amir Khan, Asaf Khan, Tahir Khan and Gul Zaman. Extension of triple Laplace transform for solving fractional differential equations. Discrete and Continuous Dynamical Systems-S (2019): 15-22.IF: 1.008

18. Nigar Ali, Gul Zaman, Anwar Zeb, Vedat Suat Erturk, and Il Hyo Jung. Dynamical Analysis of Approximate Solutions of HIV-1 Model with an Arbitrary Order. Complexity 2019 (2019). IF: 2.591.

19. Sajjad Ali Khan, Kamal Shah Gul Zaman and Fahd Jarad. Existence theory and numerical solutions to smoking model under Caputo-Fabrizio fractional derivative. Chaos: An Interdisciplinary Journal of Nonlinear Science 29, no. 1 (2019): 013128. IF: 2.643.

20. Muhammad Tahir, Syed Inayat Ali Shah, Gul Zaman and Tahir Khan. A Dynamic Compartmental Mathematical Model Describing The Transmissibility Of MERS-CoV Virus In Public. Punjab University Journal of Mathematics (ISSN 1016-2526) 51, no. 4 (2019): 57-71.

21. Muhammad Tahir, S. I. A. Shah, Gul Zaman, S.A. Hussain, M. Ishaq, and S. Muhammad. A Chronic Viral Disease MERS-Corona Model Presenting with Optimal Control Strategy, Journal of Advanced Physics Vol. 7, pp. 487-496, 2018.

22. Muhammad Tahir, Syed Inayat Ali Shah, Gul Zaman and Tahir Khan. Prevention Strategies for Mathematical Model MERS-Corona Virus with Stability Analysis and Optimal Control. Journal of Nanoscience and Nanotechnology 3 (2018): 101. IF: 1.093.

23. Amir Khan and Gul Zaman, Jung Il Hyo. Stability analysis of delay integro-differential equations of HIV-1 infection model, Georgian Mathematical Journal, no. 3 (2018): 409-418. IF: 0.551.

24. Anwar Zeb, Vedat Suat Erturk, Umar Khan, Gul Zaman and Shaher Momani. An approach for approximate solution of fractional-order smoking model with relapse class. International Journal of Biomathematics 11, no. 06 (2018): 1850077. IF:0.894.

25. Muhammad Tahir, Syed Inayat Ali Shah, Gul Zaman. Approach for Optimal Control to Prevent Infectious Diseases from Community, Journal of Advanced Physics Vol. 7, pp. 478-486, 2018.

26. Amir Khan and Gul Zaman. A hydromagnetic flow through porous medium near an accelerating plate in the presence of magnetic field. Georgian Mathematical Journal 25, no. 3 (2018): 409-418.IF: 0.551.

27. Saeed Ahmad, Muhammad Yousaf, Amir Khan, and Gul Zaman. Magnetohydrodynamic fluid flow and heat transfer over a shrinking sheet under the influence of thermal slip. Heliyon 4, no. 10 (2018): e00828.

28. Muhammad Tahir, Syed Inayat Ali Shah Gul Zaman, and Sher Muhammad. Ebola virus epidemic disease its modeling and stability analysis required abstain strategies. Cogent Biology 4, no. 1 (2018): 1488511.

29. Tahir Khan, Gul Zaman and Muhammad Ikhlaq Chohan. The transmission dynamic of different hepatitis B-infected individuals with the effect of hospitalization. Journal of Biological Dynamics 12, no. 1 (2018): 611-631. IF:1.642.

30. Asaf Khan and Gul Zaman. Optimal control strategy of SEIR endemic model with continuous age-structure in the exposed and infectious classes. Optimal Control Applications and Methods 39, no. 5 (2018): 1716-1727. IF: 1.452.

31. Anwar Zeb, Ayesha Bano, Ebraheem Alzahrani and Gul Zaman. Dynamical analysis of cigarette smoking model with a saturated incidence rate. AIP Advances 8, no. 4 (2018): 045317. IF:1.579.

32. Asaf Khan and Gul Zaman, Asymptotic Behavior of an Age Structure SEIR Endemic Model, Applied and Computational Mathematics, Vol. 17, no. 2 (2018) 185-204. IF:3.160.

33. Samia Bushnaq, Sajjad Ali Khan, Kamal Shah and Gul Zaman. Mathematical analysis of HIV/AIDS infection model with Caputo-Fabrizio fractional derivative. Cogent Mathematics and Statistics 5, no. 1 (2018): 1432521.

34. Tahir Khan, Gul Zaman and Ali Saleh Alshomrani. Spreading dynamic of acute and carrier hepatitis B with nonlinear incidence. PloS one 13, no. 4 (2018): e0191914. IF: 2.766.

35. Anwar Zeb, Sultan Hussain, Obaid J. Algahtani and Gul Zaman. Global Aspects of Age-Structured Cigarette Smoking Model. Mediterranean Journal of Mathematics 15, no. 2 (2018): 72. IF: 1.181.

36. Muhammad Altaf Khan, Saeed Islam and Gul Zaman. Media coverage campaign in Hepatitis B transmission model. Applied Mathematics and Computation 331 (2018): 378-393. IF: 3.093.

37. Amir Khan, Muhammad Shah, Hidayat Ullah Khan and Gul Zaman. Study of Jordan quasigroups and their construction. Journal of Taibah University for Science 12, no. 2 (2018): 150-154. IF:1.64

38. Tahir Khan, Amir Khan and Gul Zaman. The extinction and persistence of the stochastic hepatitis B epidemic model. Chaos, Solitons & Fractals 108 (2018): 123-128. IF: 3.064.

39. Asaf Khan and Gul Zaman. Global analysis of an age-structured SEIR endemic model. Chaos, Solitons & Fractals 108 (2018): 154-165. IF: 3.064.

40. Saima Bushnaq, Sajjad Ali Khan, Kamal Shah and Gul Zaman. Existence theory of HIV-1 infection model by using arbitrary order derivative of without singular kernel type. Journal of Mathematical Analysis 9, no. 1 (2018): 16-28.

41. Nigar Ali, Gul Zaman and Muhammad Ikhlaq Chohan. Mathematical analysis of delayed HIV-1 infection model for the competition of two viruses. Cogent Mathematics & Statistics 4, no. 1 (2017): 1332821.

42. Amir Khan, Gul Zaman, Yongjin Li, Saeed Ahmad, and Altaf Hussain. The Oscillatory Motion of Oldroyd-B Fluid by Incorporating

Some of the Mechanical Factors. Journal of Applied Mathematics and Physics 5, no. 12 (2017): 2402.

43. Gul Zaman, Il H. Jung, Delfim FM Torres and Anwar Zeb. Mathematical Modeling and Control of Infectious Diseases. Computational and Mathematical Methods in Medicine 2017 (2017). IF:1.563.

44. Tahir Khan, Il Hyo Jung, Amir Khan and Gul Zaman. Classification and sensitivity analysis of the transmission dynamic of hepatitis B. Theoretical Biology and Medical Modelling 14, no. 1 (2017): 22. IF:1.568.

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0.18 Book Published

1. **Fluid Induced by Brownian Force**
Mathematical and Numerical Interpretation
ISBN-10: 365912320X, ISBN-13: 978-3659123207
Publisher: LAP LAMBERT Academic Publishing (May 30, 2012).
2. **Competitive Approach in Mathematics**
(A book for different viva voce)In Progress

0.19 Total Citation and Impact Factor

1. Total Citation: 1464
2. Total Impact Factor: 105.1986
3. H-index: 18.00
4. i10-index: 35

0.20 Administrative Experience

1. Chairman Department of Mathematics,
1 year 9 months (29th October 2015-to-26 October 2017) University of Malakand

2. Director Administration
10 months (1st September 20016-to-8 June 2017) University of Malakand

3. Chairman Department of Mathematics,
6 months (19th Feb 2015-to-12th Aug 2015) Abdul Wali Khan University Mardan

4. Director Administration
4 months (11th October 20014-to-19 February 2015) University of Malakand

5. Chairman Department of Mathematics,
2 year 1 month (23th January 2013-to-19 February 2015) University of Malakand

6. Focal Person of one day workshop on Mathematics, University of Malakand, Funded by ORIC(UOM) 13 December, 2016.

7. Chief Proctor **3 years** (March 2011-to- March 2014) University of Malakand

8. Focal Person of the Ist National Conference on Mathematical Science, University of Malakand, Funded by HEC 11 - 13 August 2014.

9. Presenter from NUST in the meeting held in Pakistan Engineering Council Islamabad for preparation of Biomedical Engineering program

10. Meeting as a focal person with rector NUST and AMC at GHQ to develop research in Biomedical field

11. Member of advisor committee of the RCMS MS–Ph.D program

12. Participate the meeting as an expert to start B.E Biomedical Engineering in NUST

13. Member of the technical committee of the 35th International Nathiagali Summer College on Physics & Contemporary Needs

14. In charge of transport at CAMP

15. Coordinator of M.Phil–Ph.D Mathematics program 2010- 2102 at University of Malakand

0.21 Teaching Experience

1: Professor
Department of Mathematics
University of Malakand
Feb 12, 2018———Till Date
2: Professor
Department of Mathematics, Abdul Wali Khan University Mardan
(February, 2015, August 2015)
3: Associate Professor

Department of Mathematics
University of Malakand
August 2015———Feb. 11, 2018
4: Associate Professor
Department of Mathematics
University of Malakand
July 2012———19th February, 2015
5: Assistant Professor
Department of Mathematics
University of Malakand
Oct 2010———July 2012
6: Assistant Professor (NUST)
December 2008———Oct 2010-.
Centre for Advanced Mathematics and Physics
NUST, Islamabad Pakistan
7: Research Associate
Department of Mathematics Pusan National University
September 2006———November 2008.
8: Full time researcher
Institute of Mathematical Sciences, College of Natural Sciences, Pusan National University
March 2004———August 2006.
9: Lecturer
Institute of Mathematical Sciences, College of Natural Sciences, Pusan National University
March 2000———February 2004.
10: Lecturer (Private Colleges)
July 1996———August 1999.

0.22 Member of Editorial Board (International Journals)

1. VFAST Transictions of Applied Mathematics (Editor-in-Chief)
2. Computational Biology and Bioinformatics

3. Guest Editor of Special Issue (Perturbation Methods and Formal Modeling for Dynamic Systems) Abstract and Applied Analysis
4. Leading Guest Editor of Special Issue (Mathematical Modeling and Control of Infectious Diseases) Computational and Mathematical Methods in Medicine

0.23 Reviewer of International Journals

1. International Journal of the Physical Sciences
2. Journal of the Korean Society for Industrial and Applied Mathematics
3. Dynamical System & Differential Equations
4. World Applied Science Journal
5. Communication of the Korean Mathematical Society
6. Computational and Mathematical Method in Medicine
7. British Journal of Mathematics & Computer Science
8. International Journal of Biomathematics
9. Stochastic Analysis and Applications
10. Journal of Theoretical Biology
11. Springer Plus
12. Chaos, Solitons & Fractals
13. Alexandria Engineering Journal
14. Communications in Nonlinear Sciences and Numerical Simulations

0.24 Linkages/Research Collaborations

My joint research work in different areas of Applied Mathematics is in progress with the following researches.
1. Professor Jung Il Hyo my Ph.D advisor Pusan National University South Korea
2. Professor Xue-Zhi Li, Xinyang Normal University, China
3. Professor Saito, Shimane University, Matsue, Japan
4. Professor Kang Young Han Catholic University of Daegu, South Korea
5. Professor Sayed Inayat Ali Shah, Islamia College University Peshawar
6. Professor S.H. Shaker, King Saud University Saudi Arabia

7. Professor Saeed Islam Abdul Wali Khan University Mardan KPK
8. Dr. Shaban Aly, Faculty of Science, Al-Azhar University, Assiut, Egypt
9. Professor Shaher Momani, The University of Jordan, Jordan
10. Professor Vedat Suat ERTURK, Ondokuz Mayis University, Turkey
11. Professor J.M. Tchuenche, University of Guelph, Ontario, Canada
12. Professor F.B. Agusto, Austin Peay State University, Clarksville, TN, USA.
13. Dr. Madad Khan, Department of Mathematics, COMSATS Abbotabad.
14. Dr. Obaid J Algahtani, Department of Mathematics, King Saud University, Saudia Arabia.
15. Prof. Dr. Maia Marctheva, University of Florida, 358 Little Hall Gainesville, FL, USA.
16. Professor Anuar Ishak at School of Mathematical Sciences, Universiti Kebangsaan Malaysia.

0.25 Languages

1. Pushto
2. Urdu
3. English
4. Arabic
5. Korean

0.26 Hobbies/Extracurricular activates

Worked for five years with a community base organization namely Falahi Tanzeem Nawjawana Amlookdara based at Talash Dir(lower) Khyber Pakhtunkhawa
1⇒ To raise awareness among the people
2⇒ Protection of environment
3⇒ Self help
4 ⇒ Social Development
5⇒ Women and Development
6 ⇒ Bad effects of intoxing Drug

Reading books
Playing Cricket
A member of the village social welfare committee

0.27 A list of References

Dr. Jung Il Hyo
Professor of Mathematics
Pusan National University
South Korea

Dr. Abdul Latif
Professor of Mathematics
Department of Mathematics, Faculty of Science,
King Abdul Aziz University, Jeddah, Kingdom of Saudi Arab

Dr. Faiz Ahmad
Professor of Mathematics
School of Natural Sciences (SNS)
NUST, Islamabad Pakistan