PROF. DR. SAMINA MAZHAR ASHRAF

Professor of Mathematics | Academic Leader | Researcher

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PART I — ACADEMICS, TEACHING & RESEARCH

PROFESSIONAL PROFILE

Professor of Mathematics with over three decades of experience spanning university teaching, postgraduate supervision, mathematical research, academic quality assurance, and higher-education leadership. Currently serving as Professor of Mathematics and Principal, University of Education, Bank Road Campus, Lahore. The profile combines a sustained record of teaching and research with substantial university-level leadership, quality assurance, academic governance, institutional evaluation, faculty development, and campus administration.

- Professor of Mathematics, University of Education, appointed March 4, 2022.
- Currently serving as Principal, University of Education, Bank Road Campus, Lahore.
- Former Associate Professor of Mathematics, Government Graduate College, Township, Lahore.
- Former Director, Quality Enhancement Cell (QEC), Lahore College for Women University (2018–2021).
- Former Head of Mathematics Department and Head of Computer Science Department, Queen Mary College, Lahore (2016–2018).
- Former Assistant Professor and subsequently Associate Professor of Mathematics, COMSATS University Islamabad, Lahore Campus (2010–2016).
- Author of 39 research publications listed in this CV in international journals/conference proceedings.
- Supervised 2 PhD dissertations and 13 MS theses listed in this CV.
- Reviewer for international journals including Information Sciences, Fuzzy Sets and Systems, and Kuwait Journal of Mathematics.
- Served as resource person in promotion-linked training programmes organized by the Punjab Higher Education Commission (PHEC).
- Member of statutory and academic bodies including Syndicate, Academic Council, BASAR/ASARB, Boards of Studies, TTS and review committees.

RESEARCH INTERESTS

Fuzzy Logic; Fuzzy Control; Fuzzy Mathematical Economics; Fuzzy Preference Modeling; Mathematics Education; Group Decision Making; Quality Enhancement in Education.

ACADEMIC QUALIFICATIONS

- Postdoctoral Fellowship in Mathematics — Lahore University of Management Sciences (LUMS), Lahore, Pakistan, 2009.

- Ph.D. in Mathematics — Lahore University of Management Sciences (LUMS), Lahore, Pakistan, 2008. Dissertation: “Fuzzy Relations.” Supervisor: Prof. Dr. Ismat Beg.
- M.Sc. in Mathematics — University of the Punjab, Lahore, Pakistan, 1992.
- B.Sc. — University of the Punjab, Lahore, Pakistan, 1989.

ACADEMIC DISTINCTIONS & HONORS

- 1983 – Secured 1st position in Class 8 Board Examination; awarded a merit scholarship.
- 1987 – Achieved 2nd position in the Pre-Engineering Group, Gujranwala Board.
- 1989 – Received highest marks in Mathematics in the B.Sc. Examination, University of the Punjab; ranked 1st in Gujranwala Division and 5th overall in the University.
- 1995 – Secured 1st position in both the written and overall public service examinations.
- 2003 – Awarded the HEC Indigenous Scholarship; stood 1st in merit in the GAT examination (LUMS).
- 2008 – Became the first student to complete a Ph.D. in Mathematics from LUMS, with the highest CGPA.
- 2021 – Achieved 2nd position in Promotion-Linked Training for Associate Professors across Punjab, organized by the Punjab Higher Education Commission (PHEC).

TEACHING EXPERIENCE

Extensive teaching experience at undergraduate and graduate levels across public and private higher-education institutions, with teaching spanning core mathematics, advanced mathematics, and fuzzy mathematics.

Institutions Served

Government Islamia College, Lahore; Lahore University of Management Sciences (LUMS); COMSATS University Islamabad, Lahore Campus; Queen Mary College, Lahore; Government Graduate College, Township, Lahore; University of Education, Lahore; FAST National University, Lahore.

Undergraduate Courses Taught

Calculus I, II, III; Linear Algebra; Group Theory; Set Theory; Ordinary Differential Equations (ODEs); Partial Differential Equations (PDEs); Real Analysis; Functional Analysis; Topology; Mathematical Methods; Mechanics; Fuzzy Set Theory; Measure Theory.

Graduate Courses Taught

Hilbert Space Methods (MS Mathematics); Numerical Solutions to Variational Inequalities (PhD Mathematics); Topics in Applied Mathematics (PhD Mathematics); Fuzzy Logic and Applications (MS Mathematics); Abstract Algebra (MSc Mathematics); Advanced Functional Analysis (MS Mathematics); Advanced Topology (MS Mathematics); Mathematical Modelling (MS Mathematics).

RESEARCH PROFILE

Research in fuzzy mathematics and related decision-making frameworks, with work addressing fuzzy relations, similarity and inclusion measures, fuzzy orderings, fuzzy

graphs, fuzzy preference relations, intuitionistic and Pythagorean fuzzy information, fuzzy differential equations, and decision-making applications.

RESEARCH PUBLICATIONS

2026

1. Kerre, E. E., Ashraf, S., Ghias, S., & Rehman, A. U. (2026). On urban development index of a country: A fuzzy logic and Python approach. New Mathematics and Natural Computation, 22(3), 773–796.

2. Gulzar, M., Ashraf, S., & Kerre, E. E. (2026). An overview of fuzzy implication and its generalizations. Mathematics, 14(2), 330.

2024

3. Gulzar, M., Ashraf, S., & Kerre, E. E. (2024). Application of complex fuzzy relational compositions to medical diagnosis. Mathematics, 12(23), 3729.

2023

4. Qayyum, M., Kerre, E. E., & Ashraf, S. (2023). A parametric family of fuzzy similarity measures for intuitionistic fuzzy sets. Mathematics, 11(14), 3163.

5. Yu, X., Rehman, A. U., Ashraf, S., Hussain, M., & Faizi, S. (2023). Multiperson decision-making using consistent interval-valued fuzzy information with application in supplier selection. Mathematics, 11(4), 879.

2019

6. Rehman, A. U., Ashraf, S., & Qayyum, M. (2019). New results on the measures of transitivity. Journal of Intelligent & Fuzzy Systems, 36(4), 3825–3832.

7. Ashraf, S., Qayyum, M., & Kerre, E. E. (2019). Intuitionistic fuzzy bi-implicator and properties of Lukasiewicz intuitionistic fuzzy bi-implicator. Journal of Applied and Engineering Mathematics, 9(2), 315–327.

8. Naz, S., Ashraf, S., & Rashmanlou, H. (2019). Measurement of planarity in product bipolar fuzzy graphs. Journal of Applied and Engineering Mathematics, 9(2), 339–351.

2018

9. Ashraf, S., & Rehman, A. (2018). Representation theorems for transitive fuzzy orderings. Journal of Mathematical Analysis, 9(1), 65–75.

10. Ashraf, S., Ahmed, I., & Rashmanlou, H. (2018). A new technique to solve fuzzy differential equations. Journal of Intelligent & Fuzzy Systems, 34(4), 2171–2176.

11. Javed, M. A., Ashraf, S., & Husnine, S. M. (2018). On transitivity of parametric family of cardinality-based fuzzy similarity measures using Lukasiewicz implicator. Bulletin of Computational and Applied Mathematics, 6(1), 9–40.

12. Javed, M. A., Husnine, S. M., & Ashraf, S. (2018). On transitivity of parametric family of cardinality-based fuzzy similarity measures. Journal of Intelligent & Fuzzy Systems, 34(4), 2689–2706.

13. Kerre, E. E., Rehman, A. U., & Ashraf, S. (2018). Group decision making with incomplete reciprocal preference relations based on multiplicative consistency. International Journal of Computational Intelligence Systems, 11(1), 1030–1040.

14. Naz, S., Ashraf, S., & Akram, M. (2018). A novel approach to decision-making with Pythagorean fuzzy information. Mathematics, 6(6), 95.

15. Qayyum, M., Rehman, A. U., Kerre, E. E., & Ashraf, S. (2018). Application of weighted average cardinality measure of intuitionistic fuzzy sets in ranking of intuitionistic fuzzy sets. Annals of Fuzzy Mathematics and Informatics, 16(1), 13–31.

16. Ashraf, S., Naz, S., & Kerre, E. E. (2018). Dombi fuzzy graphs. Fuzzy Information and Engineering, 10(1), 58–79.

17. Naz, S., Ashraf, S., & Karaaslan, F. (2018). Energy of a bipolar fuzzy graph and its application in decision making. Italian Journal of Pure and Applied Mathematics, 40, 339–352.

2017

18. Ashraf, S., Naz, S., Rashmanlou, H., & Malik, M. A. (2017). Regularity of graphs in single valued neutrosophic environment. Journal of Intelligent & Fuzzy Systems, 33(1), 529–542.

19. Kerre, E. E., Ashraf, S., & Qayyum, M. (2017). The intuitionistic fuzzy multi-criteria decision making based on inclusion degree. Comptes Rendus de l'Académie Bulgare des Sciences, 70(7), 925–934.

2016

20. Qayyum, M., Ashraf, S., & Kerre, E. E. (2016). Measure of intuitionistic fuzzy inclusion. Comptes Rendus de l'Académie Bulgare des Sciences, 69(8), 971–980.

2015

21. Rehman, A. U., Kerre, E. E., & Ashraf, S. (2015). Group decision making by using incomplete fuzzy preference relations based on T-consistency and the order consistency. International Journal of Intelligent Systems, 30(2), 120–143.

22. Ashraf, S., Rehman, A. U., & Kerre, E. E. (2015). Group decision making with incomplete interval-valued fuzzy preference relations based on the minimum operator. International Journal of Computers, Communications & Control, 10(6), 29–42.

23. Ashraf, S. (2015). Fuzzy dissimilarity and generalization of Valverde's theorem on T-indistinguishability relations. Fuzzy Sets and Systems, 275, 144–154.

2014

24. Beg, I., & Ashraf, S. (2014). Fuzzy relational calculus. Bulletin of the Malaysian Mathematical Society, 37(1), 203–237.

25. Ashraf, S., & Javed, A. (2014). Reichenbach fuzzy set of transitivity. Applications and Applied Mathematics, 9(1), 295–310.

2012

26. Beg, I., & Ashraf, S. (2012). Gödel form of fuzzy transitivity. Sarajevo Journal of Mathematics, 8(20), 1–12.

27. Ashraf, S., & Rashid, T. (2012). Monotonicity and transitivity of cardinality-based fuzzy similarity measures. Fuzzy Information and Engineering, 24(4), 145–153.

28. Beg, I., & Ashraf, S. (2012). Fuzzy inclusion and design of measure of fuzzy inclusion. ROMAI Journal, 8(1), 1–15.

2011

29. Beg, I., & Ashraf, S. (2011). Numerical representation of product transitive complete fuzzy orderings. Mathematical and Computer Modelling, 53, 617–623.

30. Beg, I., & Ashraf, S. (2011). Fuzzy set of inclusion under Kleene's implicator. Applied Computational Mathematics, 10(1), 65–77.

31. Beg, I., & Ashraf, S. (2011). Numerical representation of a max-min transitive fuzzy ordering. The Journal of Fuzzy Mathematics, 19(3), 915–924.

2010

32. Beg, I., & Ashraf, S. (2010). On Poincaré paradox. The Journal of Fuzzy Mathematics, 18(3), 631–640.

33. Beg, I., & Ashraf, S. (2010). Fuzzy transitive relations. Fuzzy Systems and Mathematics, 24(4), 162–169.

2009

34. Beg, I., & Ashraf, S. (2009). Fuzzy dissimilarity and distance functions. Fuzzy Information and Engineering, 1(2), 205–217.

35. Beg, I., & Ashraf, S. (2009). Fuzzy inclusion and fuzzy similarity with Gödel fuzzy implicator. New Mathematics and Natural Computation, 5(3), 617–633.

36. Beg, I., & Ashraf, S. (2009). Similarity measures for fuzzy sets. Applied Computational Mathematics, 8(2), 192–202.

2008

37. Beg, I., & Ashraf, S. (2008). Fuzzy similarity and measure of similarity with Lukasiewicz implicator. New Mathematics and Natural Computation, 4(2), 191–206.

38. Beg, I., & Ashraf, S. (2008). Fuzzy equivalence relations. Kuwait Journal of Science and Engineering, 35(1A), 33.

2006

39. Beg, I., & Mazhar, S. (2006, February). Fuzzy transitive relations. In Proceedings of the 27th Linz Seminar on Fuzzy Set Theory (pp. 14–16).

RESEARCH REVIEWING

Reviewer for several renowned international journals of Elsevier, including Information Sciences, Fuzzy Sets and Systems, and Kuwait Journal of Mathematics.

POSTGRADUATE SUPERVISION

PhD Students Supervised

- Dr. Atiq-ur Rehman — T-norms Based Fuzzy Ordering and their Applications in Fuzzy Preference Modeling.
- Dr. Madiha Qayyum — New Measures of Intuitionistic Inclusion and Similarity with Applications.
- Mr. Muhammad Gulzar- Final stages of completeion.

MS Students Supervised

- Tabassam Rashid – Monotonicity and Transitivity of Fuzzy Similarity Measures
- Aslam Javed – Transitivity of Cardinality-Based Similarity Measures
- Mehjabeen Mehmood – Application of Fuzzy Logic to Computer-Based Student Evaluation
- Sadaf Rasheed – Fuzzy Inclusions.
- Farrukh Mehmood – Fuzzy Logic in Traffic Control.
- Nimra Jamil – Fuzzy Graphs.
- Iqra Bibi – Fuzzy Decision-Making with Industrial Applications.
- Humaira Rahat – Fuzzy Relational Equations and Medical Diagnosis.
- Sadia Ghias – Evaluation of Development Index of Various Cities of Pakistan Through Fuzzy Inference System.
- Misbah Shahzad – Optimizing Career Placement: A Sophisticated Approach Through Extended Fuzzy Logic Relational Composition.
- Ayesha Rasool – A Group Decision-Making Strategy for Humanoid Robotics.
- Nadir Ali – Model of Anisotropic Self-Gravitating Compact Star in Einstein Gauss-Bonnet Theory.
- Sajjad Hussain – Hamacher Operations Based on Power Operators.
- Hafiz Muhammad Usma – A Multi-Attribute Group Decision-Making Approach Using Entropy-QUALIFLEX.
- Ashna Mahnoor - A Review of Fuzzy and Crisp Similarity Measures and Their Application to the Comparative Analysis of Calculus Curricula and Teaching Practices Across Universities in Lahore.

ACADEMIC PRESENTATIONS, SEMINARS, WORKSHOPS & INVITED LECTURES

- Fuzzy Set Theory with its foundation in Lattice Theory, Weekly Seminar Series ASSMS Lahore, May 2017.
- Applications of fuzzy logic, Lecture delivered on Mathematics Day in Govt Post Graduate College Township 2014.
- A practical model to calculate Utility in Market problems RAMMA 2014, Lahore School of Economics.
- Fuzzy Relations, Summer School in Fixed Point Theory, Lahore University of Management Sciences, Lahore (Pakistan) 2005.
- Fuzzy Preference Structures, Spring Conference in Mathematics, Lahore University of Management Sciences, Lahore (Pakistan) 2006.
- Fuzzy Transitivity and Poincare Paradox, Summer Conference in Mathematics, Lahore University of Management Sciences, Lahore (Pakistan) 2006.
- Resource person in Workshop on Fuzzy Sets and Systems, Lahore University of Management Sciences, Lahore (Pakistan) 2006.
- Fuzzy Dissimilarity Measures and Fuzzy Distance Functions, Winter Conference in Mathematics, Lahore University of Management Sciences, Lahore (Pakistan) 2006.
- Fuzzy Inclusions, Summer Conference in Mathematics, Lahore University of Management Sciences, Lahore (Pakistan) 2007.
- Fuzzy Utility Functions1, Summer Conference in Mathematics, Lahore University of Management Sciences, Lahore (Pakistan) 2008.
- Fuzzy Utility Functions2, Conference on Recent Advances in Mathematical Methods, Models & Applications, Lahore University of Management Sciences, Lahore (Pakistan) 2008.
- Mathematicians' perspectives on logical thinking and reasoning in mathematics, Workshop on New National Curriculum 2006 (Mathematics) Standard Five: Logical Thinking and Reasoning, Lahore University of Management Sciences, Lahore (Pakistan) 2008.
- Colloquium talk on "Fuzzy Similarity Measures and Fuzzy Transitivity," Lahore University of Management Sciences, Lahore (Pakistan) 2007.
- Colloquium talk on "Fuzzy Equivalence Relations," Lahore University of Management Sciences, Lahore (Pakistan) 2008.
- Fuzzy Similarity measure, Summer Conference in Mathematics-2009, July 27-28.
- Numerical Representations of product transitive fuzzy ordering, Conference on Recent Advances in Mathematical Methods, Models & Applications-2009, April 18-19, 2009.
- Numerical Representations of Fuzzy orderings, Seminar Series, Department of Mathematics, COMSATS Institute of Information Technology, Lahore, 2012.
- Lattice Valued Fuzzy Similarity, Recent Advances in Mathematical Modeling, 2013, LSE, Lahore.
- Intuitionistic fuzzy Bi implicator, 2014, Seminar Series UMT Lahore.
- Applications of Fuzzy Mathematics, World Mathematics Day, Government College Township, Lahore, 2015.
- Seminar on Difficulties of students in Undergraduate Mathematics, University of South Asia, 2019.

PART II — ADMINISTRATIVE DUTIES, ACADEMIC LEADERSHIP & INSTITUTIONAL SERVICE

UNIVERSITY OF EDUCATION — CURRENT LEADERSHIP & INSTITUTIONAL SERVICE

- Principal, University of Education, Bank Road Campus, Lahore.
- Member, Syndicate, University of Education, Lahore.
- Member, Board of Advanced Studies and Research (BASAR), University of Education, Lahore.
- Member, Academic Council, University of Education, Lahore.
- Coordinator, Department of Mathematics, University of Education, Bank Road Campus.
- Warden, Hostel, University of Education, Bank Road Campus.
- Member, University Discipline Committee.
- Member, University TTS Standing Committee.
- Member, Financial Aid Committee.
- Member, MPhil/PhD Review Committee.
- Convener, University Rationalization Committee for non-teaching staff.
- Member, Admission Committee.
- Member, Annual Report Committee.
- Co-Patron, She Shines, the first women's magazine of the University of Education, Lahore.
- Member, Board of Studies in Mathematics.
- Member, Board of Faculty, Division of Science and Technology.
- Organizer, Thesis Display Exhibition at Alhamra Arts Council.
- Member, Steering Committee for Convocation.
- Member, University Library Committee.
- Member, House Allotment Committee.

DIRECTOR, QUALITY ENHANCEMENT CELL (QEC), LAHORE COLLEGE FOR WOMEN UNIVERSITY — 2018–2021

Institutional Leadership, Quality Assurance & Academic Governance

- Served as an active member of the Syndicate, Academic Council, Advanced Studies and Research Board (ASARB), and participated in meetings of Boards of Studies (BOS).

MPhil/PhD Programme Review

- Led preparation of reports and data for internal and external reviews of postgraduate programmes and worked under the supervision of the Vice Chancellor to revise and align programmes with regulatory standards and policies.

Institutional Performance Evaluation (IPE)

- Prepared three comprehensive University Portfolio Reports and organized internal assessment visits to support institutional performance evaluations.

Self-Assessment Reporting Process (SARP)

- Oversaw continuous implementation of the HEC-prescribed SARP across 46 academic departments, establishing Program Assessment Teams (PATs), guiding module completion, and coordinating departmental visits.

Quality Enhancement Cells at Affiliated Colleges

- Established and officially notified QECs in affiliated colleges; conducted institutional visits and developed structured implementation plans communicated to the respective authorities for action.

HEC Reviewer — IPE and MPhil Programme Evaluations

- Served as Program Reviewer (PR) and IPE evaluator for several universities on behalf of the Higher Education Commission, including the University of Faisalabad, University of Management and Technology (UMT), Lahore, FAST National University, and University of Engineering and Technology (UET).

University Rankings & Global Impact

- Led the Ranking Team at Lahore College for Women University (LCWU), with focused efforts on Times Higher Education Impact Rankings.
- LCWU achieved 15th position globally in the Sustainable Development Goal (SDG) 5: Gender Equality category and improved to 7th position globally in the subsequent year.

Tenure Track System (TTS) Coordination

- Served as TTS Coordinator, processing promotion cases for 28 faculty members (Professors and Associate Professors), later endorsed and approved by the Higher Education Commission (HEC).
- Worked as a member of the Higher Education Commission team in development of the 2023 Undergraduate Policy.

COMSATS UNIVERSITY ISLAMABAD, LAHORE CAMPUS — 2010–2016

- Head, Research Group on Applied Mathematics – served until 2012.
- Head, Research Group on Fuzzy Logic – 2012 to 2016.
- Organizer, Workshop on Mathematics Curriculum – 2012.
- Member, Campus Discipline Committee (CDC) – 2013 to 2016.
- Member, Departmental Academic Review Committee (DARC).
- Member, Campus Academic Review Committee (CARC) – 2013 to 2016.
- Editor, Department of Mathematics Newsletter – since 2012.
- Member, Proctorial Board – 2011 to 2016.

QUEEN MARY COLLEGE, LAHORE — 2016–2018

- Head, Mathematics Department.
- Head, Computer Science Department.
- Member, College Council.
- Member, Purchase Committee.
- Member, Proctorial Board.
- Focal Person, Chief Minister Laptop Scheme.
- Member, supervisory committee for the laptop scheme in LCWU and Fatima Jinnah Medical College with DPI Team.
- Member, Board of Studies in Mathematics, University of the Punjab.

BROADER ACADEMIC & PROFESSIONAL LEADERSHIP

Core areas of administrative and academic leadership include academic governance and statutory bodies; quality assurance and enhancement; MPhil/PhD programme review; institutional performance evaluation; self-assessment reporting; faculty promotion and TTS coordination; academic programme review; university rankings and impact reporting; admissions; student affairs and discipline; hostel administration; financial aid; institutional committees; campus administration; and coordination with regulatory and higher-education bodies.