

CURRICULUM VITAE

NAME:	Faryal Chaudhry
FATHER'S NAME:	Shah Muhammad
DATE OF BIRTH:	Sep 03, 1989
NATIONALITY:	Pakistani
PERMANENT ADDRESS:	House No. 16/10, Block A, Canal City, Lahore.
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ACADEMIC QUALIFICATION

PhD (Mathematics)	Abdus Salam School of Mathematical Sciences, Lahore (July 2016) Course Work (3.02/4.00) Comprehansive (4.00/4.00)
PhD Thesis Title	Hankel Ideaks Associated with Graphs
PhD Supervisor	Prof. Dr.Viviana Ene, Faculty of Mathematics and Computer Science, Ovidius University, Constanta, Romania.
MPhil (Mathematics)	Abdus Salam School of Mathematical Sciences (September 2013) (3.02/4.00)
MPhil Thesis Title	Classes of Bionomial Edge Ideals
MPhil Supervisor:	Prof. Dr.Viviana Ene, Faculty of Mathematics and Computer Science, Ovidius University, Constanta, Romania.
Bsc (Mathematics)	University of the Punjab, Lahore (September 2011) (3.82/4.00)

Field of Interest

- Combinatorial Algebra
- Graph Theory
- Combinatorics
- Fuzzy Algebra
- Fuzzy Graph Theory

- ORCID ID:

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- ResearchGate ID:

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- Web of Science ID:

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- Google Scholar ID:

<https://scholar.google.com/citations?hl=en&user=NuDV2r4AAAAJ>

- Scopus ID:

<https://www.scopus.com/authid/detail.uri?authorId=57213855187>

EXPERIENCE

A. ACADEMIC EXPERIENCE:

Dec. 2016 – todate	Assistant Professor , Department of Mathematics and Statistics, The University of Lahore, Lahore.
Feb. 2016– Dec.2016	Lecturer , Department of Mathematics and Statistics, The University of Lahore, Lahore.
Feb 2016 – Dec.2017	Visiting Faculty , FAST NUCES Lahore

B. RESEARCH EXPERIENCE/ PROJECTS

Aug. 2017 – September. 2017	Worked as a Research Assistant , Faculty of Mathematics and Computer Science "Ovidius" University, Bd. Mamaia 124
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C. ADMINISTRATIVE EXPERIENCE

January.2025-todate	Member of Interdisciplinary Research Group
March.2025-todate	Executive Member of Pakistan Mathematical Society
January. 2025-todate	Member of Editorial Team
October. 2023 – todate	Coordinator of M.Phil. and Ph.D. Programmes
May. 2023-todate	Member of Departmental Interview Committee
December. 2023-todate	Member of Comprehensive Examination Committee
April. 2023- todate	Member of Departmental Research Committee

D. CONFERENCE EXPERIENCE

29 Jan. 2024 –31 Jan. 2024 Organizing member of International Conference on Gravitation and Cosmology (ICGC24) held at The University of Lahore-Pakistan.
<https://uol.edu.pk/event/international-conference-on-gravitation-and-cosmology-icgc24/>

E. COMPUTER EXPERIENCE

- MS Office
- LaTeX
- Mathematica
- Maple

F. ONLINE CLASSES EXPERIENCE:

- Google Classroom
- LMS
- UMS
- Zoom Meeting
- Google Meet
- SAP
- Slat

G. TEACHING EXPERIENCE:

i) Taught the following subjects:

1. Algebra (M.Phil.& Ph.D.) at The University of Lahore.
2. Advanced Number Theory (M.Phil.& Ph.D.) at The University of Lahore.
3. Group Theory (M.Phil.& Ph.D.) at The University of Lahore.

4. Monomial Algebra (M.Phil.& Ph.D.) at The University of Lahore.
5. Number Theory (M.Phil.& Ph.D.) at FAST NUCES Lahore.
6. Graph Theory (M.Phil.& Ph.D.) at The University of Lahore
7. Field Extension (M.Phil.& Ph.D.) at The University of Lahore.
8. Elementary Number Theory (BS 5th) at The University of Lahore.
9. Introduction to Fuzzy Systems (BS 5th) at The University of Lahore.
10. Rings and Modules (BS 8th) at The University of Lahore.
11. Linear Algebra (BS 5th) at The University of Lahore.
12. Set Theory (BS 4th & 5th) at The University of Lahore.
13. Topology (BS 6th) at The University of Lahore.
14. Real Analysis (BS 4th) at The University of Lahore.
15. Multivariate Calculus (BS 2nd & 4th) at The University of Lahore.
16. Calculus and Analytic Geometry, at FAST NUCES Lahore Lahore.
17. Probability and Statistics, FAST NUCES Lahore

ii) Invited Speaker to 25th National School of Algebra

1. *The regularity of the invariant National School of Algebra*
(University of Bucharest, Bucharest, Romania, September 3- September 9, 2017)

iii) CIMPA SCHOOL and CONFERENCES

- a. I have presented my work in “**6th International Conference on Emerging trends in Engineering management and Sciences**”, **September 2023**, City University of Science and Technology, Peshawer, Pakistan.
- b. I have presented my work in “**1st International Conference on Pure and Applied Sciences**”, **March 2016**, University of Management and Technology, Lahore, Pakistan.
- c. I have attended the CIMPA school “*Levith Path Algebras and C^* Algebras*” **September 2015, Izmir-Turkey.**
- d. I have attended the CIMPA school “*Algebraic Geometry and Number theory*” **June 2014, Istanbul-Turkey.**

- e. I have attended the seminar “***Algebraic Geometry and Sheaf Theory***” by Prof. Hironori Shiga, 2014, ASSMS-GCU, Lahore-Pakistan.
- f. I have attended the “***6th World Conference on 21st Century Mathematics***”, 6-9 March, 2013”, Abdus Salam School of Mathematical Sciences, GCU Lahore, Pakistan..
- g. I have attended the seminar “***Fascinating Numbers by Prof. Dato Dr. HJ Kamel Ariffin Mohammad Atan (Chairman, Institute of Mathematical Research, University Putra Malaysia, MALAYSIA) on March 13, 2012 at ASSMS***
- h. I have attended the “***An Encounter of Algebra and Geometry, A Sharing and Learning Conference***” (Conference dedicated to Barbu Berceanu on his 60th birthday) held at ASSMS-GCU Lahore, Pakistan, November 19-22, 2011.
- i. I have participated in ***International Series of Seminars/Courses/Tutorials on Analy by Prof. Florian Luca***, (Instituto de Matemticas de la UNAM) October 3-15, 2011 at ASSMS-GCU Lahore, on Analytical Number Theory.
- j. I have attended the “***5th World Conference on 21st Century Mathematics***”, 9-13 February, 2011, ASSMS-GCU Lahore, Pakistan.

List of PUBLICATIONS

Publications in International Journals

1. Farooq, U., Abbas, W., & Chaudhry, F. (2025). Multi-Criteria Decision Making and Graph Theory-Based Optimization of the Lahore Metro System: A Metric Dimension, VIKOR, and PROMETHEE Approach. *Journal of Mathematics Research*, 17(1), 1-51.
2. Farooq, U., Abbas, W., Chaudhry, F., Azeem, M., & Almohsen, B. (2025). Exploring metric dimension of nanosheets, nanotubes, and nanotori of SiO₂. *PloS one*, 20(3), e0316376.
3. Chaudhry, F., Farooq, U., Abbas, A., Maktoof, M., Farahani, M., Alaeiyan, M., &

- Cancan, M. (2025). On metric dimension of circumcoronene series of benzenoid networks. *Journal of Discrete Mathematical Sciences and Cryptography*, 28(2).
4. Chaudhry, F., Afzal, D., Hussein, N., Abbas, A., Abbas, W., Farahani, M., ... & Cancan, M. (2025). Investigating the metric and edge metric dimensions of H-naphthalenic nanotubes. *Journal of Discrete Mathematical Sciences and Cryptography*, 28(2).
 5. Chaudhry, F., Farooq, U., Maktoof, M., Mousa, S., Farahani, M., Alaeiyan, M., ... & Cancan, M. (2025). Exploring metric dimensions in chemical structures: Insights and applications. *Journal of Discrete Mathematical Sciences and Cryptography*, 28(2).
 6. AlQadi, H., Hanif, M. F., Hussain, M., Siddiqui, M. K., Chaudhry, F., & Fiidow, M.A. (2024). On analysis of phthalocyanine network through statistical method. *Scientific Reports*, 14(1), 31362.
 7. Abbas, W., Chaudhry, F., Farooq, U., Baber, M. Z., & Sulaiman, T. A. (2025). Exploring the metric dimensions of graphene: Unveiling the intricacies of its atomic structure. *Modern Physics Letters B*, 39(21), 2550007.
 8. Chudhary, F., Farooq, U., Azeem, M., & Shang, Y. (2024). Investigating metric dimension and edge metric dimension of hexagonal boron nitride and carbon nanotubes. *European Journal of Pure and Applied Mathematics*, 17(3), 2055-2072.
 9. Yasin, F., Afzal, Z., Chaudhary, F., Akgul, A., Hassan, A. M., & Karamat, M. (2024). Exploring physico-chemical properties of HIV/AIDS drugs using neighborhood topological indices of molecular graphs. *Discover Applied Sciences*, 6(3), 93.
 10. Chaudhry, F., Manjunatha, H. R., Hayat, H., & Hasan, A. (2022) Study of Topological Properties of Molecular Structure of Aztec Diamond. *International journal of mathematics and its applications*, 7, 21-41.
 11. Chaudhry, F., Manjunatha, H. R., Hayat, H., & Hasan, A. (2022) Valency Based Topological Indices of Starphene Graph. *International journal of mathematics and its applications*, 2, 41.
 12. Afzal, D., Hameed, S., Ashraf, U., Mehmood, A., Chaudhry, F., & Thapa, D. K. (2022). Study of Neighborhood Degree-Based Topological Indices via Direct and NM-Polynomial of Starphene Graph. *Journal of Function Spaces*, 2022(1), 8661489.
 13. Afzal, D., Afzal, F., Hussain, S., Chaudhry, F., & Thapa, D. K. (2022). Investigation on Boron Alpha Nanotube by Studying Their M-Polynomial and Topological Indices. *Journal of Mathematics*, 2022(1), 6136168.
 14. Iftikhar, A. Mahboob, A. & Chaudhry, F. (2021). On some characterization of nerly

Hall S-semienbedded subgroups of finite groups. *Journal of Prime Research in Mathematics*, 17(2), 439-452.

15. Afzal, F., Alsinai, A., Zeeshan, M., Afzal, D., Chaudhry, F., & Cancan, M. (2021). Some new degree based topological indices of h-naphtalenic graph via M-polynomial approach. *Eurasian Chem. Commun*, 3(11), 800-805.
16. Afzal, F., Zamanb, M., Chaudhryb, F., Afzalb, D., Farahanic, M. R., & Cancand, M. (2021). Computational analysis of new degree-based descriptors of Zig-Zag Benzenoid system. *Eurasian Chemical Communications*, 3(6), 418-424.
17. Afzal, F., Cancan, M., Ediz, S., Chaudhryb, Afzal, D. (2021 Degree-based entropy of molecular structure of HAC5C7[P,Q]. *Eurasian Chemical Communications*, 3(2021) 291-295
18. Afzal, F., Farahani, M., Cancan, M., Arshad, F., Afzal, D., & Chaudhry, F. (2021). Topological indices of the system of generalized prisms via m-polynomial approach. *Eurasian Chemical Communications*, 3(5), 296-300.
19. Chaudhry, F., Shoukat, I., Afzal, D., Park, C., Cancan, M., & Farahani, M. R. (2021). M-Polynomials and Degree-Based Topological Indices of the Molecule Copper (I) Oxide. *Journal of Chemistry*, 2021(1), 6679819.
20. Chaudhrya, F., Sattarb, S., Ehsana, M., Afzalc, F., & Reza, M. Calculating the topological indices of Starphene graph via M-polynomial approach. *Eurasian Chemical Communications*, 3 (2021), 656-664.
21. Chaudhry, F., Ehsan, M., Afzal, D., Farahani, M. R., Cancan, M., & Ediz, S. (2021). On computation of M-polynomial and topological indices of starphene graph. *Journal of Discrete Mathematical Sciences and Cryptography*, 24(2), 401-414.
22. Hashmi, M. K., Chaudhry, F., Khalaf, A. J. M., & Farahani, M. R. (2021). Investigation of dendrimer structures by means of reverse atomic bond connectivity index. *Journal of Discrete Mathematical Sciences and Cryptography*, 24(2), 473-485.
23. Chaudhry, F., Ehsan, M., Afzal, F., Farahani, M., Cancan, M., & Ciftci, I. (2021). Computing M-polynomial and topological indices of TUHRC4 molecular graph. *Eurasian Chemical Communications*, 3(2), 103-109.
24. Afzal, F., Alsinai, A., Hussain, S., Afzal, D., Chaudhry, F., & Cancan, M. (2021). On topological aspects of silicate network using M-polynomial. *Journal of Discrete Mathematical Sciences and Cryptography*, 24(7), 2109-2119.
25. Anwar, A., & Chaudhry, F. (2021). On certain products of complex intuitionistic fuzzy graphs. *Journal of Function Spaces*, 2021(1), 6515646.

26. Ehsan, M., Sattarb, S., Chaudhry, F., Afzal, F., & Reza, M. (2021). Topological analysis of zigzag-edge coronoid graph by using M-polynomial. *Eurasian Chem Commun*, 3, 590-597.
27. Chaudhry, F., Ehsan, M., Afzal, F., Farahani, M. R., Cancan, M., & Ciftci, I. (2021). Degree based topological indices of tadpole graph via m-polynomial. *Eurasian Chemical Communications*, 3(1), 146-153.
28. Chaudhry, F., Husin, M. N., Afzal, F., Afzal, D., Ehsan, M., Cancan, M., & Farahani, M. R. (2021). M-polynomials and degree-based topological indices of tadpole graph. *Journal of Discrete Mathematical Sciences and Cryptography*, 24(7), 2059-2072.
29. Khalaf, A. J. M., Dilawer, H., Afzal, F., Maqbool, A., Afzal, D., & Chaudhry, F. (2020). Right zero divisor graph of 2×2 matrices over $\mathbb{Z}_3$. *Journal of Information and Optimization Sciences*, 41(8), 1803-1810.
30. Wang, Z., Chaudhry, F., Naseem, M., & Asghar, A. (2020). Reverse Zagreb and Reverse Hyper-Zagreb Indices for Crystallographic Structure of Molecules. *Journal of Chemistry*, 2020(1), 9805829.
31. Afzal, F., Sherwani, F. K., Afzal, D., & Chaudhry, F. (2020). On the left zero divisor graph of 3×3 matrices over $\mathbb{Z}_2$. *Journal of Information and Optimization Sciences*, 41(4), 1043-1060.
32. Afzal, F., Bibi, R., Afzal, D., & Chaudry, F. (2019). Hydrothermal Ageing Impact and Damage Characterization for Polymeric Composites by means of Experimental Techniques. *Modern Concepts in Material Science*, 2, 1-8.
33. Afzal, F., Naeem, M., Chaudhry, F., & Afzal, D. (2020). Study of some topological invariants of subdivided mk graphs. *Eurasian Chem. Commun*, 2, 731-738.
34. Chaudhry, F., & Irfan, R. (2020). On the generalized binomial edge ideals of generalized block graphs. *Math. Reports*, 22(72), 3-4, 381-394.
35. Chaudhry, F., & Qureshi, A. A. (2017). Hankel ideals of 2-minors associated with pairs of proper intervals graphs. *Journal of Algebra and Its Applications*, 16(04), 1750070.
36. Chaudhry, F., Dokuyucu, A., & Ene, V. (2015). Binomial edge ideals and rational normal scrolls, to appear in Bulletin of *Iranian Mathematical Society*, 41, 471-479.
37. Chaudhry, F., Dokuyucu, A. & Irfan, R. (2015). On the Binomial Edge Ideals of Block

Graphs, *Analele Stiintifice ale Universitatii Ovidius Constanta-Seria Matematica*, 24(2) (2016), 149–158.

Accepted Articles:

1. **Faryal Chaudhry**, Deeba Afzal, Mustafa Inc and Muhammad Jibril Shahab Sahir Assimilation of dynamic fractional inequalities associated on time scales. *Matematički Vesnik*, (2025).
2. Umar Farooq, Wasim Abbas, **Faryal Chaudhry**. Strengthening Network Resilience: Metric and Fault-Tolerant Dimensions in Triangular Graphene Nanoflakes. *Main Group Metal Chemistry*, (2025).
3. Umar Farooq, Wasim Abbas, **Faryal Chaudhry**, Muhammad Azeem.: Exploring Kevlar's Chemical Structure through Advanced Topological Co-Indices. *Synergy International Journal of Multidisciplinary Studies*, (2025).
4. Umar Farooq, Wasim Abbas, **Faryal Chaudhry**, Muhammad Azeem: Exploring the Fault-Tolerant Metric Dimension (FTMD) of the M-Polynomial for Zigzag Edge Coronoids Fused with Starphene. *Modern Physics Letters B*, (2025).
5. Umar Farooq, Wasim Abbas, **Faryal Chaudhry**, Muhammad Azeem. Metric Dimension Analysis of Single-Walled Titania Nanotubes: A Graph-Theoretic Approach, *Modern Physics Letters B*, (2025).

Achievements

1. Quality Research Award

Abdus Salam School of mathematical Sciences presented Quality Research Award in 2015.

PhD Supervised

1. Mr. Wasim Abbas

Title: A Novel Study of Metric Dimension of Selected Graphs
(*Thesis Submitted*)

2. Mr. Umar Farooq

Title: Metric and fault-tolerant metric dimensions of selected molecular graphs
(*28, July 2025*)

3. Ms. Abida Anwar

Title: "Comparison Among Different Graphs with Applications."
(27, February 2024)

4. Mr. Khalid Hashmi

Title: "Topological descriptors of some molecular graphs and para-line graphs of honeycomb derived networks."
(12, January 2022)

5. Mr. Iftikhar Ali

Title: "Influence of Permutability and Embeddedness on p -solvability and p -nilpotency of Finite Groups."
(30, August 2022)

PhD Enrolled

1. Ms. Sarah Asghar

Approved Thesis Title: *Extensions and applications of fuzzy sets modeling in multi-criteria decision-making problems*

MPhil Supervised

1. Ms. Rukhsana Aslam

Title: Comparison of high degree regularity indices of certain chemical graphs.
(26, February 2025)

2. Ms. Sadia Amjad

Title: Comparison of metric dimensions of selected graphs..
(26, August 2024)

3. Mr. Mehmood Nawaz Khan

Title: Computational analysis of fault tolerant metric dimension of some selected chemical graphs..
(26, August 2024)

4. Mr. Usman Rafique

Title: Vertex edge $V_E(G)$ and edge vertex $E_v(G)$ degree based topological indices of some molecular structures
(13, June 2023)

5. Ms. Shami Khalid

Title: Topological study of hierarchical hypercube network and optics transpose interconnection system biswapped network

(13, June 2023)

6. Ms. Bisma Ahsan

Title: Analysis of temperature based topological indices of some molecular structures.

(03, August 2023)

7. Ms. Maryam Bibi

Title: Computational analysis of fuzzy topological indices of family of guar gum graph and its chemical derivatives

(11, April, 2023)

8. Mr. Hasnain Hayat

Title: The topological indices of anticancer drugs and aztec diamond

(15, September 2022)

9. Mr. Bilal Mehmood

Title: The study of zagreb polynomials and degree-based indices of dominating oxide network, dominating silicate network and right triangular oxide

(02, April 2022)

10. Ms. Saira Shafiq

Title: Study of zagreb index and lanzhou index of different graphs.

(21, September 2022)

11. Ms. Saira Tariq

Title: Study of zagreb polynomial and multiple zagreb indices for the line Graph of banana tree graph, firecracker graph and subdivision graph.

(21, September 2022)

12. Ms. Mahrukh Ali

Title: zagreb polynomials and redefined zagreb indices of copper(i)oxide and copper(ii)oxide

(11, September 2021)

13. Ms iqra shoukat

Title: General $(\alpha, 2)$ -path sum-connectivity indices of Crystallographic structure of molecules $Cu_2O(p, q)$ and $Cu_2O(p, q, r)$

(01, November 2020)

14. Ms. Saima Shoukat

Title: M-polynomial and degree-based topological indices of the molecule copper (i) oxide

(01, November 2020)

15. Mr. Saddam Hussain

Title: On M- polynomial and topological indices of Crown Graphs

(01, November 2020)

16. Mr. Muhammad Ehsan

Title: On computation of M-polynomial and topological indices of starphene graph $TUHC_4$ nanotubes graph, tadpole graph and zigzag edge coronoid graph

(01, November 2020)

17. Ms. Maria Saif

Title: On eccentricity connectivity indices of some classes of graph.
(11, April 2019)

18. Ms. Tooba Javid

Title: Propagation of breaking solutions in (2+1)-Dimensional system by new modified direct algebraic
(09, August 2021)

19. Ms. Sana Hayat

Title: The study of neighborhood indices of tickyism spiking neural network method
(02, April 2022)

20. Mr. Muhammad Arshad

Title: Valency based topological properties of some graphs
(09, February 2022)

21. Mr. Muhammad Imran

Title: Topological Properties of Four Types of Porphyrin Dendrimers
(09, February 2022)

22. Mr. Saad ul Hassan

Title: Valency based topological properties of generalized wheel graph and porphyrin cored dendrimers based on vertex-edge and edge-vertex degree
(16, September 2022)

23. Mr. Umair Ahmad

Title: Study of topological indices of silicon carbide Si_2C_3 [n,m] and water-soluble unimolecular polyether micelle
(16, September 2022)

24. Mr. Faheem Ayyub

Title: Topological properties of polyhydroxyalkanoate polymers based on vertex edges degree and edges vertex degree
(21, November 2022)

25. Ms. Maida Sameera Naeem

Title: Metric dimension of starphene structure and rhombus shaped benzenoid hydrocarbons
(09, August 2021)

26. Ms. Sana Liaqat

Title: Topological indices of some special graphs and certain networks.
(3, April 2021)

27. Mr. Muhammad Hammad

Title: M-polynomial and some topological indices of right triangulene oxide network and dominating oxide network.
(01, December 2021)

28. Ms. Saira Nasir

Title: Study of newest degree-based topological description via m-polynomial of some chemical graph.

(01, December 2021)

LANGUAGES

- English (fluent)
- Urdu (fluent)

REFERENCES

- | | |
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