JAWAHIRA ZOHRA

LECTURER
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PROFILE

Jawahira Zohra is working as a Lecturer in the Department of Mathematics at The Women University Multan, Pakistan. She is also pursuing her PhD in Mathematics, with her doctoral research focusing on "**A Study of Tumor Growth and Detection Using Mathematical Methods and Deep Learning Algorithms.**" Her research lies at the intersection of mathematical biology, computational mathematics, mathematical modeling, and artificial intelligence, particularly the application of deep learning techniques to biomedical and medical imaging problems She is a dedicated mathematician and researcher with more than 11 years of university-level teaching experience. She has also supervised MPhil students. She is the **scholarship coordinator** for the department of Mathematics. She is departmental focal person of PMYLS and CMPLS. She has also organized exhibitions of History of Mathematics in WUM, and seminars regarding Mathematical concepts. She is a member of the **Society for Mathematical Biology (SMB**) and has been actively engaged with the international mathematical biology research community. She has participated in and contributed to academic activities involving mathematical biology, conferences, workshops, and research collaborations. She is also participating in **Muslim in Academia (MIA) Mentorship Program, European Women in Math (EWM). Research Interests**: Her current research focuses on the integration of mathematical modeling of tumor growth and brain tumor detection, with particular emphasis on mathematical models of glioma growth, reaction-diffusion equations, Physics-Informed Neural Networks. Her broader interests include mathematical biology, cancer modeling, machine learning, deep learning, medical imaging, and interdisciplinary applications of mathematics in healthcare.

PROFESSIONAL ACHIEVEMENTS

Final Year Projects Supervised at BS Mathematics

Supervised two projects as the final year project of BS 8th semester students, session (2018-2022)

Project 1: Domination number and its independent system on path-related graphs

1. Mahnoor Jamil (B-MAT-18-21)
2. Tooba Faryad (B-MAT-18-23)
3. Iqra Irfan (B-MAT-18-27)

Project 2: Domination number and its independent system of Path Graphs

1. Salma Bibi (B-MAT-18-20)
2. Wajeeha Kousar (B-MAT-18-10)
3. Nimra Altaf (B-MAT-18-14)

MPhil students Supervised

1. Co-supervised MPhil student JAVERIA SARDAR, Roll NO (MMAT-F23-03), her research topic was "Classification of Breast Tumor Analysis using CNN architecture", session (2023-2025)
2. Currently, I am working with 2 MPhil students of session (2024-2026) in the field of Mathematical Biology

   Atia Zahid (MMAT-F24-09) & Maryam Saleem (MMAT-F24-08)

Professional Engagements

- University Representative in CASPAM Regional Student Olympiad of Mathematics (CRSOM) 9, Bahauddin Zakariya University, Multan. Feb 2025
- University Representative in CRSOM 6 in Bahauddin Zakariya University, Multan. 16th April 2019.
- Nominated as focal person from the Mathematics Department for Prime Minister Youth Laptop Scheme (PMYLS) 2023
- Nominated as focal person from the Mathematics Department for the Chief Minister's Punjab Laptop Scheme (CMPLS) in 2025.
- Nominated as Departmental Scholarship In charge since 2020

Achievements

- Membership with the "Society for Mathematical Biology" organization from March 2026
- Member of European Women in Math

- Certified by IBM Developer Skills Network under Deep Learning Fundamentals August 2025

- One-day training session on "Outcome-Based Education and its Fundamental Elements" organized by QEC at WUM. 5 Dec 2025

- Presented a talk on "Application of deep learning techniques for brain tumor detection" at the 2nd International Conference on Mathematics for a Sustainable Future (ICMSF-2024). Dec 2024

- Presented a talk on "Introduction to Artificial Intelligence under Mathematics " at The Women's University, Multan. Oct 2023

- Faculty orientation training program, organized by PHEC, 31st May 4th June 2021

PUBLICATIONS

- Traveling wave analysis of glioblastoma progression: Coupling tumor dynamics with immune and micro environmental responses, https://doi.org/10.1016/j.rineng.2026.111954

EVENTS ATTENDING

- Webinar on Innovative Research in Mathematics and Industry- Academia Linkages Organized by CASPAM BZU, Multan, Aug 2021

- 5th UMT International Conference on Pure and Applied Mathematics, Lahore Mar 2019

- 3rd International Conference on Global Challenges in Energy and Environment Development (ICGCEED-2023) 20-21 sep 2023

- Two days training of Presiding Officeres and Sr. Assistant Presiding Officeres GE 2018, organized by Election Commission of Pakistan and the United Nation Development Program, Multan July 2018
- Ist Workshop on teaching Undergraduate Mathematics at BZU Aug 2017

- Career development workshop for women in science at WUM Feb 2017

- National symposium on condensed matter & nano technology at WUM Mar 2016

EVENTS ORGANIZED

• 2nd International Conference on Mathematics for a Sustainable Future (ICMSF-2024), at The Women University Multan, Pakistan. 18-19 December 2024

• British Council Gender Equality Partnership project PIE (Partnership in Equality) for UK-Pakistan Women in Robotics and AI. 14th June 2024

Organizing student seminar during PhD research work WUM Oct 2023

• 1st International Conference on Mathematics for a Sustainable Future (ICMSF-2022), at The Women University Multan, Pakistan. 12-14 December 2022

• Seminar on “Comparative Learning of Mathematical Concepts”. 13th December 2021

• One day international Webinar on "Challenges Innovation and Opportunities in Mathematics". 21st June 2021

• One Day Symposium on “Mathematical Learning using Modern Techniques”. 17th December 2021

• Three-Day Workshop on Soft Skills. 9-12 March 2020

• Seminar on “Emerging Trends of Data Science and Cryptography". Nov 2019

• History of Mathematics Exhibition, The Women University Multan. 3rd May 2017

QUALIFICATION

- **The Women University Multan** Sep 2022- Present
  PhD Scholar
  I completed my Ph.D. coursework with a CGPA of 3.92/4.00, and my research topic is the study of tumor growth and detection using mathematical methods and deep learning algorithms. Currently, one manuscript is submitted for publication, and the other is under work. I am specifically working on brain tumor growth and detection.
- **NCBA&E. Multan**
  M.Phil. Mathematics 2014-2016
  CGPA 4.00/4.00, I completed my degree in the field of Graph theory
- **International Islamic University Islamabad Pakistan**
  M.Sc. Mathematics 2006-2008
  CGPA 3.64/4.00
- **Alama Iqbal Open University Islamabad**
  Bachelor of Education (B.Ed.) 2013
  Passed Examination with Grade A

SKILLS ACQUIRED

Ability to conduct a research project in organizational development

Proficient in English, Urdu, Saraiki

Command of Python Language

Command of mathematical software's such as Mathematica, Maple, MATLAB

TEACHING EXPERIENCE

Lecturer, THE WOMEN UNIVERSITY MULTAN Dec 2013- Present

I taught different subjects in BS Mathematics programs as well as in M.Sc. Mathematics. Currently I am working on Artificial Intelligence techniques, specifically Machine Learning models on tumor growth. As a PhD scholar, my research area deals with mathematical biology.

Lecturer, MAMOONA POST GRADUATE COLLEG WOMEN MULTAN Sep 2010-Sep 2013

WORK ASSIGNED BY DEPARTMENT

Departmental Scholarship In charge 2018-Present

Departmental Examination In charge 2013-2018

Departmental Attendance In charge 2018

Coordinator of BS Mathematics program

Member of Departmental Event Organizing Committee 2013-Present

Member of Departmental Admission committee

RESEARCH INTERESTS

Mathematical Biology

Machine Learning algorithms on tumor growth

Deep learning techniques of tumor growth and detection