Dr. Seema Zubair

Professor of Statistics | Statistician | Researcher

Current Position: Professor of Statistics, The University of Agriculture, Peshawar, Pakistan
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SCOPE: Statistical Modelling | Teaching & Curriculum Design | Postgraduate Supervision | Research & Publication

Full Professor of Statistics and PhD statistician (Carleton University, Canada) with 20 years of university teaching, research, and postgraduate supervision, preceded by four years of applied statistical work in the public sector. Rose through the academic ranks from Lecturer (2009) to Full Professor in the Department of Mathematics, Statistics & Computer Science at The University of Agriculture, Peshawar. Expert in longitudinal and missing-data methods, semi-parametric and robust regression, and applied statistical modelling, with 35+ peer-reviewed publications. Recognised for designing engaging, research-informed curricula, supervising Master·s and PhD research, and building inclusive learning environments across undergraduate and postgraduate levels.

- Statistical Modelling
- Missing Data Methods
- Semi-parametric Models
- Generalised Linear Models
- Bayesian Statistics
- Data Analysis & Visualisation
- Quantitative Business Methods
- Longitudinal Data Analysis
- Robust Regression
- Mixed & Multilevel Models
- Survey Design & Sampling
- Multivariate Analysis
- Research Methods
- Operations Research
- Curriculum Development
- Teaching Excellence
- PhD / MSc Supervision
- Thesis Examination & Moderation
- Academic Advising & Mentorship
- Research Ethics & Integrity
- Committee Leadership

Career Achievements

- Advanced through every academic rank from Lecturer (2009) to Full Professor at The University of Agriculture, Peshawar.
- Published 35+ articles in reputable peer-reviewed journals, including Journal of Applied Statistics, PLOS ONE, and PeerJ Computer Science.
- Developed new semi-parametric methods for incomplete longitudinal count data, validated on the Health and Retirement Study (HRS) dataset.
- Supervised PhD, MPhil, and MSc research students across multiple departments.
- Taught 20 courses spanning BBA/MBA, BIT/MIT, BS/MSc, and MS/PhD programmes, from introductory statistics to computational and Bayesian statistics.
- Designed and implemented national household and population welfare surveys as Assistant Director – Statistics.
- Awarded graduate scholarships by York University and Carleton University (2014–2019) and a Gold Medal for first position in MS Human Resources (2010).

Research & Technical Snapshot

Statistical Software: R, SAS, SPSS, Minitab, MATLAB, Python, Statistix

Statistical Methods: Longitudinal data, missing data & dropouts, generalised estimating equations (GEE), spline smoothing, robust regression, GLMs, mixed & multilevel models, Bayesian statistics, experimental design

Research Interests: Longitudinal Data | Missing Data | Robust Regression | Semi-parametric & Non-parametric Models | Sampling Techniques | Multivariate Analysis | Statistical Modelling | Data Visualisation

Doctoral Research: Semi-parametric partially linear marginal models for longitudinal data with dropouts within a generalised second-order GEE framework, using spline-based smoothing and weighted regression-spline methods.

Courses Taught – BBA/MBA: Introduction to Statistics, Business Statistics, Calculus, Business Analytics, Data Visualization

Courses Taught – BIT/MIT: Statistics and Applications, Probability and Statistics, Linear Algebra, Differential Equations

Courses Taught – BS/MSc: Applied Statistics, Experimental Design, Operations Research, Statistical Theory, Quantitative Business Methods (QBM)

Courses Taught – MS/PhD: Robust Regression, Bayesian Statistics, Numerical Analysis, Computational Statistics, Research Methods

Professional Experience

Professor (Full Professor) | The University of Agriculture (Peshawar, Pakistan) | 2009 - Present

Joined the Department of Mathematics, Statistics & Computer Science as Lecturer in 2009 and advanced through the academic ranks to Full Professor. Lead teaching, research, and postgraduate supervision in statistics and mathematics, and contribute to departmental governance and curriculum design.

Key Contributions

- Delivered in-person and online courses in statistics, mathematics, and research methods at BS, MSc, MPhil, and PhD levels, with consistently positive student feedback.
- Supervised PhD and MPhil/MSc research students across multiple departments.
- Published 35+ articles in reputable peer-reviewed journals, advancing applied and theoretical statistics.
- Designed and updated course content and materials, strengthening the department's curriculum.
- Served on departmental and ethics committees; assigned and oversaw duties of faculty, teaching assistants, and technical staff.
- Led interdisciplinary research and teaching initiatives and community outreach programmes.

Statistical Officer (Assistant Director – Statistics) | Bureau of Statistics (Pakistan) | 1999 - 2003

Managed the design, collection, analysis, and reporting of official household and population welfare surveys.

Key Contributions

- Designed and implemented household and population welfare surveys, ensuring data accuracy and completeness.
- Conducted statistical analysis in SPSS and SAS and prepared reports and visualisations for technical and non-technical audiences.
- Implemented data quality-control procedures and coordinated with cross-functional teams.

Lecturer | I.B.M.S. & C.S., Agriculture University Peshawar, Pakistan | 1999 - 2009

Supported teaching, course development, student assessment, and academic administration at I.B.M.S. & C.S., Agriculture University Peshawar.

Key Contributions

- Involved in the research and designing of new courses and materials.
- Assessed students' coursework and learning materials.
- Involved in setting examinations and marking results.
- Provided mentoring, advice, and personal support to students.
- Conducted staff appraisals.
- Prepared monthly and quarterly progress reports for senior managers.
- Actively led class discussions and encouraged debate.

Education

PhD – Statistics and Probability | 2020
Carleton University, Ottawa, Canada

MA – Statistics | 2015
York University, Toronto, Canada (CGPA 3.71 / 4.00)

MS – Human Resources | 2010
The University of Agriculture, Peshawar, Pakistan (CGPA 3.83 / 4.00, Gold Medallist)

Professional Courses / Certificates

- Certificate in Tertiary Teaching and Learning (CTTL)
- Epigeum: Supervising Doctoral Studies
- Epigeum: Research Integrity for Experienced Researchers
- Epigeum: Statistical Research Methods – Supporting Your Research with Data Analysis

Full publication list: ORCID 0000-0002-6942-9038 | ResearchGate – Seema Zubair