Daud Ahmad

HEC Approved PhD Supervisor

Professional Biography

Dr. Daud Ahmad is a permanent faculty member in the Department of Mathematics, University of the Punjab, Lahore, Pakistan. He began his career in 1995, with nearly 30 years of teaching experience, and has held positions at prestigious institutions such as UET, Taxila and GCU, Lahore. His research includes Differential Geometry, with a focus on variational quasi-minimal surfaces, applied mathematics, Riemannian geometry, spacetime symmetries, and modified gravity theories. **Dr. Ahmad** earned his MPhil in General Relativity (investigating homothety equations for spherically symmetric spacetimes as solutions to the EFEs) from Quaid-i-Azam University, Islamabad. He received his PhD in Differential Geometry (investigating quasi-minimal surfaces) from the University of the Punjab, Lahore. He has published over 30 articles in reputable international journals, including collaborative work with 14 leading foreign researchers, and has served as a reviewer for nine journals. Dr. Ahmad has supervised 3 PhD scholars, 15 MPhil scholars, and supervised 3 MSc projects. Currently, he is supervising 5 PhD scholars and 4 MPhil scholars.

Personal Details

Present Status	Assistant Professor (Mathematics)		
Degrees	BSc, MSc, MPhil, PhD (Mathematics)	Gender	Male
Postal Address	Department of Mathematics, University of the Punjab, Lahore-54590 Pakistan	Citizenship	Pakistan
Contact	Mob +92-300-9420381 Off +92-42-99231241 Ext: 109 Fax +92-42-99230329	Email	daud.math@pu.edu.pk daudahmadpu@yahoo.com
MathSciNet	http://www.ams.org/mathscinet/search/author.html?mrauthid=619350	Institution	https://pu.edu.pk/images/cv/1401252171422.pdf
Researchgate	http://www.researchgate.net/profile/Daud_Ahmad3/	Google Scholar	http://scholar.google.com.pk/citations?user=uMMBv14AAAAJ&hl=en
ORCID	http://orcid.org/0000-0003-0966-8237	Arxiv	http://arxiv.org/find/math/1/au:+Ahmad_D/0/1/0/all/0/1
Wordpress	https://daudahmadblog.wordpress.com	Linkedin	https://pk.linkedin.com/in/dr-daud-ahmad-98295285

Research Interests

Minimal Surfaces

- **Ansatz method and interpolation techniques**- Linear, bilinear, trilinear and multilinear interpolation, polynomial interpolation- Hermite interpolation, Bernstein-Stancu Polynomials and Bézier Surfaces, Durrmeyer variant of Bernstein-Stancu operators
- **Ansatz Method for surfaces spanned by continuous boundary curves**- Constraint structure for variationally improved surfaces- Coons patches, algorithmic approach to extended boundary Coons patches, bilinearly blended and bicubically blended Coons patches, extended Coons patches spanned by a finite number of boundary curves
- **Discrete surfaces- Modified Bernstein polynomials based Bézier surfaces**- Bézier surfaces, modified Bernstein polynomial based Bézier surfaces, q and (q, p)-Bernstein polynomials based Bézier surfaces
- **Plateau Bézier Problems**- quasi-minimal Bézier surfaces as the control points extremal of mean curvature functional, rms of square of mean curvature functional, the Willmore energy functional, Dirichlet functional, extended Dirichlet functional, harmonic and biharmonic functional, Ginzburg-Landau Energy Functional.
- **Quasi-Minimal and Harmonic Structures**- Quasi-minimal and quasi harmonic constraint structures for Bezier surfaces, Bezier surfaces with shifted knots, λ-Bezier surfaces, Bezier surfaces as the solution of general partial differential equations

General Relativity

- **Symmetry Analysis**- Lie symmetry analysis to find symmetries of spherically symmetric spacetimes including homotheties and solutions of differential equations, conservation laws, with applications in various physical and computational systems
- **Gravitation**- Stability analysis of anistropic compact stars in modified gravity theories

Research Background

MPhil Work

My MPhil work is in the field of general relativity. Einstein's filed equations (EFEs) break down into ten separate highly non-linear partial differential equations with the geometric requirement that the spacetime can be represented by a Riemann manifold together with the description of matter and gravitation. A metric is said to be an exact solution of EFEs if its components could be given in suitable coordinates. The exact solutions of EFEs can be found by requiring a special type of symmetry, one of them is to work out homothety equations for a spacetime (others are conformal motions, Ricci collineations, curvature collineations, affine collineations etc.). They are called homtheties or homothetic motions along which the metric tensor of the spacetime remains invariant up to a scale. In my MPhil dissertation, I worked out homothety equations to find the solution of Einstein's field equations for spherically symmetric space-times admitting maximal isometry groups larger than $SO(3)$ along with their metrics without imposing any restrictions on the stress energy tensor and found that there are either 11 or 7 or 5 homotheties.

Ph.D. Work

A minimal surface is a surface of zero mean curvature at all points and has attracted the never-ending interest of mathematicians in all branches of science. My work is on the construction of a quasi-minimal surface by implementing numerically an algorithm using an ansatz to reduce the area of a surface spanned by a boundary comprising four curves by initiating a variational improvement in the initial surface. The ansatz consists of original surface plus a variational parameter multiplying the unit normal to the surface, numerator of its mean curvature function and a function of its parameters chosen such that its variation at boundary points is zero. This gives a variational surface for which it is possible then to evaluate and optimize the rms mean curvature to obtain minimum value of the variational parameter which gives a variationally improved surface of reduced area. The algorithm is extendible for a surface spanned by a finite number of boundary curves after partitioning these finite number of curves into four groups and joining all the curves in each group into one analytic curve by using representations of unit-step functions (worked out quasi-minimal surfaces spanned by a boundary comprising five lines).

Education

Academic

Dec. 04, 2006- May 22, 2014 **Ph.D.**, *University of the Punjab*, Lahore, Pakistan.
Course Work- CGPA 3.95 Spectral Theory in Hilbert Spaces I, Minimal Surfaces, Lattice Theory, BCK Algebra, BCI Algebra, Spectral Theory in Hilbert Spaces II
Title of the Thesis: Variational Improvement to Near-Minimal Surfaces and Comparison with Numerical Outputs of Exact Expressions
The work is related to computation of quasi-minimal surfaces spanned by four boundary curves in space, extendible to a surface spanned by more than four curves by giving a partition of these boundary curves into four groups and then to join all the curves in a group into one analytic curve by using step-function representations.
Research Supervisors: Prof. Dr. Shaban Ali Bhatti and Dr. Bilal Masud (Associate Professor and Director, CHEP)

1993-1995 **M.Phil., CGPA 3.5**, *Quaid-i-Azam University*, Islamabad, Pakistan.
Courses: Advanced Analytical Dynamics I, Mathematical Techniques for Boundary Value Problems, General Relativity and Cosmology I & II, Astro Physics, Elastodynamics, Partial Differential Equations, Numerical Solutions to Partial Differential Equations, Group Methods for Differential Equations
Title of the Thesis: Homothetic Motions
(worked out the homothety equations for spherically symmetric space-times admitting maximal isometry groups larger than $SO(3)$ along with their metrics without imposing any restrictions on the stress energy tensor.)
Research Supervisor: Dr. M. Ziad

1987-1989 **M.Sc., Marks 68 %**, *University of the Punjab*, Lahore, Pakistan.
Courses: Special Theory of Relativity, Numerical Analysis, Quantum Mechanics, Mathematical Statistics, Real Analysis, Complex Analysis, Algebra.

1985-1987 **B.Sc., Marks 63%, 1st division**, *Government Islamia College Civil Lines*, Lahore, Pakistan.
Courses: Mathematics and Physics

Computer Skills

CAS Work comfortably with the Computer Algebra System (CAS), **Mathematica** for numeric, symbolic and graphics programming and familiar with **Matlab** as well.

LaTeX Work comfortably with LaTeX type setting

MS Office Microsoft Office suite (Word, Excel and Power Point)

MathType Work comfortably with Equation Editor for TeX LaTeX and MathML documents

Computer Courses Attended

Oct. 08, 2001- Jan 22, 2002 Attended a course of MS Office, Department of Computer Science, GC University, Lahore, Pakistan.

Mar. 30, 2002- Apr. 22, 2002 Attended a training course **Intel® Teach to the Future** with support from Microsoft Company at 83-D Model town, Lahore, Pakistan.

Research Supervision

Ph.D.

2024- todate Ms. Maham Ilyas
Provisional Research Area: Rastall Gravity in Modified Gravity Theory (current project)
University of the Punjab, Lahore, Pakistan

2024–to date Mr. Sulaman Shaukat
Provisional Research Area: Gravitation (current project)
University of the Punjab, Lahore, Pakistan

2024–to date Mr. Muhammad Shafaqat
Provisional Research Area: Modified Gravity (current project)
University of the Punjab, Lahore, Pakistan

2021- todate Mr. Abrar Ahmad
Extensions of Complex Fuzzy Graphs (work in progress)
University of the Punjab, Lahore, Pakistan

2021- todate Ms. Anila
Classification of Modular and Algebraic Based Structured Graphs with Their Spectral Characteristics (work in progress)
University of the Punjab, Lahore, Pakistan

2021- 2024 Mr. Muhammad Sufyan
Extension of Gravitational Anisotropic Stellar Models
University of the Punjab, Lahore, Pakistan

2021- 2024 Ms. Sadia Bashir
Minimal and Harmonic Bézier Structures
University of the Punjab, Lahore, Pakistan

2018- todate Ms. Mariyam Ehsan Buttar
Quasi-Minimal Generalized Blended Bézier Surfaces
University of the Punjab, Lahore, Pakistan

M. Phil.

2021- todate Ms. Samra Baber
Clouds of String in Gravity (work in progress)
University of the Punjab, Lahore, Pakistan

2021- todate Ms. Bakhtawar
Modified Gravity Theories (work in progress)
University of the Punjab, Lahore, Pakistan

2021- todate Mr. Abdur Rehman
Compact Stellar Models (work in progress)
University of the Punjab, Lahore, Pakistan

2021- todate Mr. Farhan Raza
Geometric Characteristics of Minimal Surfaces (work in progress)
University of the Punjab, Lahore, Pakistan

2023-2024 Ms. Nosheen Nawaz
Stellar Dynamics in $f(R)$ Gravity: Insights from Tolman-Kuchowicz Spacetime
University of the Punjab, Lahore, Pakistan

2023-2024 Ms. Um e Hafsa Asif
Exploring Stellar Properties in $f(R)$ Gravity: Karmarkar Condition Analysis
University of the Punjab, Lahore, Pakistan

2023-2024 Mr. Muhammad Awais
Exploring Stability Parameters of Compact Stars in the Gogoi-Goswami $f(R)$ Gravity Model
University of the Punjab, Lahore, Pakistan

2022-2023 Ms. Ansa Samer
Exploring Optimal Geometric Configurations and Characteristics of (p,q)-Bernstein Bézier Surfaces
University of the Punjab, Lahore, Pakistan

2022-2023 Mr. Asad Rafique
Investigating (p,q)-Bernstein Bézier Surfaces: Geometric Properties and Surface Energy Minimization in 3-D Pseudo Euclidean Space
University of the Punjab, Lahore, Pakistan

2022-2023 Ms. Maham Ilyas
Unveiling the Celestial Enigma: Comparative Analysis of Anisotropic Models and Stability Considerations
University of the Punjab, Lahore, Pakistan

2021-2022 Mr. Abdul Haseeb
Variational Improvement Scheme for Curvature Based Willmore Surfaces
University of the Punjab, Lahore, Pakistan

2019-2020 Ms. Arsha Khalid
q-Bernstein Quasi-Minimal Surfaces as the Extremal of Dirichlet Functional
University of Sargodha, Lahore Campus, Lahore, Pakistan

2019-2020 Ms. Sadia Bashir
Bi-Harmonic Toric Bézier Surfaces
University of Sargodha, Lahore Campus, Lahore, Pakistan

2017-2018 Ms. Asma Yousaf
Generalized Quasi-Minimal Bézier Surfaces as the Structural Membranes
University of the Punjab, Lahore, Pakistan

2017-2018 Ms. Farheen Samra
Generating a q-Bernstein Bézier Surface and the Bézier Surface with Shifted Knots as the Solution of 4^{th}-order PDE
University of the Punjab, Lahore, Pakistan

2016-2017 Ms. Kiran Naz
Quasi-Minimal Harmonic Coons Patches
University of the Punjab, Lahore, Pakistan

2016-2017 Ms. Kanwal Hassan
Quasi-Minimal Bézier Surfaces with Shifted Knots as Extremal of Dirichlet Functional
University of the Punjab, Lahore, Pakistan

2015-2016 Ms. Saba Naeem
Quasi-Minimal Bézier Surfaces, B-B Coons Patches and Quasi-Harmonic Toric Bézier Surfaces
University of the Punjab, Lahore, Pakistan

2001-2002 Mr. Kashif Habib
Homotheties of Spherically Symmetric Space-time Admitting $\mathbf{G_3}$ as Maximal Isometry Group
G.C. University, Lahore, Pakistan

B.Sc. Hons.

2002-2005 **Ms. Ayesha Shakeel, Ms. Farsia Hussain, Ms. Kiran Saeed, Ms. Kulsoom Iqbal**, *Some Applications of Graph Theory*, University of the Punjab, Lahore, Pakistan.

M. Sc.

1998-2000 **Ms. Nazia Rehman**, *Paradoxes in Special Theory of Relativity*, G.C.University, Lahore, Pakistan.

1998-2000 **Ms. Sumaira Sharif**, *Newtonian Gravitation Theory verses Special Theory of Relativity*, G.C.University, Lahore, Pakistan.

1997-1999 **Ms. Shama Jabeen**, *Minkowski Space-time Diagrams*, G.C.University, Lahore, Pakistan.

Awards and Honors

2016-17 **Performance Evaluation Award**, *University of the Punjab*, Lahore, Pakistan.

2013-14 **Performance Evaluation Award**, *University of the Punjab*, Lahore, Pakistan.

2012-13 **Performance Evaluation Award**, *University of the Punjab*, Lahore, Pakistan.

2012 **Incentive Award**, *University of the Punjab*, Lahore, Pakistan.

2004 **Advance Increments**, *performance based three advance increments in the interview for the post of Assistant Professor*, University of the Punjab, Lahore, Pakistan.

2003 **Governor's Scholarship Scheme (Ph.D.) for In-service Teachers-2003**, *G.C. University, Lahore*, Pakistan, (not availed).

2003 **Development of S & T Manpower through Indigenous Scholarship Scheme-2003**, *Quaid-i-Azam University, Lahore*, Pakistan, (not availed).

Grant/Project

2013-14 **Project 2013-14 No. D/34/Est.1**, *University of the Punjab*, Lahore, Pakistan.
Dated: Jan 01, 2014

2015-16 **Project 2015-16 No. D/999/Est.1**, *University of the Punjab*, Lahore, Pakistan.
Dated: March 07, 2016

2024-25 **Project 2024-25 No. D/999/Est.1**, *University of the Punjab*, Lahore, Pakistan.
Dated: March 07, 2016

Fields of Interest

- Computational and Variational Methods for Minimal Surfaces
- Geometry, Relativity and Cosmology
- Group Methods for Differential Equations
- Integral Equations

Author

2014 Ph.D. Thesis
Variational Improvement to Near-Minimal Surfaces and Comparison with Numerical Outputs of Exact Expressions

1995 M. Phil. Thesis
Homothetic Motions

Professional Activities

Reviewer

Oct. 2024 PLOS ONE
Sept. 2024 https://journals.plos.org/plosone/

April 2024 Chinese Journal of Physics (CJP)
https://www.sciencedirect.com/journal/chinese-journal-of-physics

Aug. 2024 Punjab University Journal of Mathematics
Aug. 2023 https://pu.edu.pk/home/journal/pujm

Sept. 2024 Sigma Journal of Engineering and Natural Sciences (YTUJENS)
Feb. 2023 https://eds.yildiz.edu.tr/sigma

Dec. 2023 VFAST Transactions on Software Engineering (VFAST)
https://vfast.org/journals/index.php/VTSE/index

Sept. 2023 Alexandria Engineering Journal (AEJ)
https://www.sciencedirect.com/journal/alexandria-engineering-journal

May 2022 Journal of Function Spaces (JFS)
https://www.hindawi.com/journals/jfs/

July 2015 Computers & Mathematics with Applications (CAMWA)
http://www.journals.elsevier.com/computers-and-mathematics-with-applications/

Feb. 2016 Advances in Mechanical Engineering (AIME)
http://ade.sagepub.com/

Symposia and Seminars Attended

Feb. 04, 2020 Lecture Series and Discussion on Introduction to Peace Building and Conflict Transformation, University of the Punjab, Lahore, Pakistan.

May 17-18, 2017 1^{st}-LGU National Conference on Pure and Applied Mathematics (1st GNCPAM-2017), organized by Lahore Garrison University, DHA Phase IV, Lahore-PAKISTAN.

Nov. 23-25, 2017 1^{st} International Meeting on Science and Society, organized by National Centre for Physics and Center for High Energy Physics, University of the Punjab.

Nov. 08, 2013 Lecture Series on Cosmology by Prof. Dr. Asghar Qadir, Department of Mathematics, University of the Punjab, Lahore, Pakistan.

Mar. 25-28, 2013 Conference: 5th International Meeting on Particles and Fields
Centere for High Energy Physics (CHEP), University of the Punjab, Lahore, Pakistan.

2000-2003 Departmental Seminar Series, Department of Mathematics, GC University, Lahore, Pakistan.

2001 Conference: Mathematics, Lahore University of Management Sciences (LUMS), W. Sector, D. H. A. Lahore.

Feb. 11-13, 2010 Conference, General Relativity and Gravitation, Department of Mathematics, University of the Punjab, Lahore, Pakistan.

Nov. 18-20, 1999 Symposium: Astrophysics, Relativity & Cosmology, Quaid -e- Azam University, Islamabad, Pakistan.

1993-1995 Departmental Seminar Series, Department of Mathematics, Quaid -e- Azam University, Islamabad, Pakistan.

Workshops and Colloquium

October 01, 2022 **NATIONAL UNDERGRADUATE MATHEMATICS CONTEST**; Member of organizing committee and evaluation committee, Department of Mathematics, University of the Punjab, Lahore, Pakistan.

Feb. 14-18, 2022 PU-NMS- International Schools Series for Students and Faculty
Workshop on Interpolations Formulae, Groups and Algebraic Curves
Prof. Michel Waldschmidt and Prof. Michel Jambu
Department of Mathematics, University of the Punjab, Quaid-e-Azam Campus, Lahore

July 31, 2021 **NATIONAL UNDERGRADUATE MATHEMATICS CONTEST**; Member of organizing committee and evaluation committee, Department of Mathematics, University of the Punjab, Lahore, Pakistan.

Sept. 16-18, 2017 **International Workshop on Nonlinear Analysis and Applications (IWNAAP-2017)**
University of Management and Technology, Centre for Mathematics and its Applications (CMAP)

Dec. 08-12, 2014 Workshop: **Indigenous On-Campus Training Program** conducted by University of the Punjab, Lahore, Pakistan.

Sep. 06-10, 2004 Orientation Program: **6th HRDC National Faculty Orientation Program**, Environmental Law Center, University Law College, University of the Punjab, Lahore, Pakistan.

June 24-29, 2002 **International Workshop and Colloquium on Mathematics**: Coordinated the workshop for six days, Developed agenda, scheduled speakers and organized discussion groups, GC University Lahore, Pakistan.

2001-2002 **Departmental Seminar Series**; Organized the seminar series for an year as Incharge, Department of Mathematics, GC University, Lahore, Pakistan.

Presentations

Feb. 24, 2020 Department of Mathematics, University of the Punjab, Lahore, Pakistan
Title: **Conflict Resolution Strategies**

Sept. 16, 2017 University of Management and Technology, Centre for Mathematics and its Applications (CMAP)
Title: **Quasi-Minimal Bézier surfaces as the Extremal of Energy Functionals**

Oct. 23, 2013 Departmental Seminar Series, Department of Mathematics, University of the Punjab, Lahore, Pakistan.
Title: **A Coons patch spanning a finite number of curves tested for variationally minimizing its area-I**

Oct. 30, 2013 Departmental Seminar Series, Department of Mathematics, University of the Punjab, Lahore, Pakistan.
Title: **A Coons patch spanning a finite number of curves tested for variationally minimizing its area-II**

2005 Departmental Seminars Series, Department of Mathematics, University of the Punjab, Lahore, Pakistan.
Title: **Group Theoretic Approach to Differential Equations**

2002 Departmental Seminar Series, GC University, Lahore.
Title: **Relativity and Contemporary Theories of Universe**

1995 Departmental Seminar Series, Quaid-e-Azam University, Islamabad, Pakistan.
Title: **Homothetic Motions**

Professional Membership

- Member Scientific Committee Second World Conference on 21st Century Mathematics 2005, School of Mathematical Sciences, GC University, Lahore, Pakistan
- Member Punjab Mathematical Society, Lahore, Pakistan
- Member Pakistan Mathematical Society, Islamabad, Pakistan

Experience

Teaching and Work

Faculty Member

Apr. 22, 2004-to-date **Assistant Professor of Mathematics**, *University of the Punjab*, Lahore, Pakistan.
Courses Taught:
MPhil/**MS**: ○ Riemannian Geometry, ○ Minimal Surfaces, ○ Integral Equations, ○ General Relativity, ○ Cosmology
MSc/**BS**: ○ Complex Analysis, ○ Differential Geometry, ○ Mechanics, ○ Vector and Tensor Analysis, ○ Mathematical Techniques for Boundary Value Problems, ○ Ordinary and Partial Differential Equations, ○ Special Theory of Relativity, ○ Analytical Dynamics, ○ Discrete Mathematics, ○ Linear Algebra courses to the students of **MSc**, **BSc** (Hons. 3 year programs) and **BS** (4 year programs) at University of the Punjab (UoP), Lahore, Pakistan.

Aug. 18, 2003-Apr. 21, 2004 **Lecturer in Mathematics**, *Government Islamia College*, Lahore, Pakistan.
(Government of the Punjab)

Dec. 04, 1998-Aug. 18, 2003 **Lecturer in Mathematics**, *GC University*, Lahore, Pakistan.
(Government of the Punjab)

June 29, 1998-Dec. 03, 1998 **Lecturer in Mathematics**, *Govt. Degree College Sangla Hills*, Distt. Sheikhupura, Pakistan.
(Government of the Punjab)

Aug.30, 1997-Jun. 27, 1998 **Lecturer in Mathematics**, *Govt. College Pir Phulahi*, Distt. Chakwal, Pakistan.
(Government of the Punjab)

Dec. 02 1995-Aug. 29 1997 **Teaching & Research Associate**, *University of Engineering and Technology*, Taxila, Pakistan.

Sep. 1993-Feb.1996 **Research Assistant**, *Department of Mathematics, Quaid-i-Azam University*, Ialmabad, Pakistan.

Visiting Faculty .

Semester-I Aug. 15, 2022 Semester-II Dec. 19, 2022 **Visiting faculty member**, *Institute of Metallurgy & Materials Engineering, University of the Punjab,*, Lahore, Pakistan.
B.Sc. (Engg.) Metallurgy and Materials Engineering (Session 2021-2025), Engineering Mathematics-II, Fall Semester (NSC-125)

October 11, 2018-Feb., 2019 **Visiting faculty member**, *Institute of Chemical Engineering & Technology, University of the Punjab,*, Lahore, Pakistan.
Advanced Engineering Mathematics Fall Semester (CHE-610)

Sept. 15, 2018-Feb., 2019 **Visiting faculty member**, *Ripha International University, Lahore Campus (RIU)*, Lahore, Pakistan.
MSc Course- Integral Equations
MPhil Course Advanced Partial Differential Equations-Mathematics- Fall 2018

Jan. 23, 2018-May 05, 2018	**Visiting faculty member**, *National University of Computer and Emerging Sciences (FAST)*, Lahore, Pakistan. Semester IV- Numerical Methods (MT207) in Computer Science Department (CSD)
Feb. 19, 2018-July 16, 2018	**Visiting faculty member**, *Institute of Chemical Engineering & Technology, University of the Punjab,*, Lahore, Pakistan. Advanced Engineering Mathematics Spring Semester (CHE-610)
Apr. 11, 2015-todate	**Visiting faculty member**, *University of Sargodha Lahore Campus*, Lahore, Pakistan. MPhil Courses: Riemannian Geometry, Integral Equations, Minimal Surfaces
2006- 2007	**Visiting faculty member**, *National University of Computer and Emerging Sciences (FAST)*, Lahore, Pakistan.
Sep. I3, 2000-2001	**Visiting faculty member**, *National College of Business Administration and Economics*, (N C B A & E) Gulberg III, Lahore, Pakistan.
Term I of 2001 &2002	**Visiting faculty member**, *Beaconhouse Informatics, Gulberg II*, Lahore, Pakistan.
July 22, 1995-Sep. 02, 1995	**Visiting faculty member**, *Royal Institute of Engineering & Technology*, Gulberg III, Lahore, Pakistan.
Dec. 04, 1994-Mar. 31, 1995	**Visiting faculty member**, *NUST College of Electrical and Mechanical Engineering*, (CEME), Rawalpindi, Pakistan.

Courses Taught

UoP	**University of the Punjab (UoP), Lahore, Pakistan** **PhD/MPhil/MS**: ○ Riemannian Geometry, ○ Minimal Surfaces, ○ Integral Equations, ○ General Relativity, ○ Cosmology **M.Sc/BS** (4 year programs)/**B.Sc. Hons.** (3 year programs): ○ Complex Analysis, ○ Differential Geometry, ○ Mechanics, ○ Vector and Tensor Analysis, ○ Mathematical Techniques for Boundary Value Problems, ○ Ordinary and Partial Differential Equations, ○ Special Theory of Relativity, ○ Analytical Dynamics, ○ Discrete Mathematics, ○ Linear Algebra
RIU	**Riphah International University (RIU), Lahore Campus, Lahore, Pakistan** **MPhil/MSc**: ○ Advanced Partial Differential Equations, ○ Integral Equations
NUCES	**National University of Computer and Emerging Sciences (NUCES-FAST), Lahore, Pakistan** **BS**: Numerical Methods (Semester IV-MT207) in Computer Science Department (CSD)
ICET	**Institute of Chemical Engineering & Technology, University of the Punjab, Lahore, Pakistan** **MS** Advanced Engineering Mathematics Spring Semester (CHE-610)
UoS	**University of Sargodha (UoS) Lahore Campus, Lahore, Pakistan** **MPhil**: ○ Riemannian geometry, ○ Linear Integral Equations ○ Minimal Surfaces
IBA	**Institute of Business Administration (IBA), University of the Punjab, Lahore, Pakistan** **MBA**: Mathematics and Statistics for Management (E-554)
GCU	**GC University (GCU), Lahore, Pakitan** **MSc/BSc**: ○ Calculus, ○ Mechanics, ○ Vector and Tensor Analysis, ○ Mathematical Methods of Physics, Special Theory of Relativity, ○ Analytical Dynamics
NUCES (FAST)	**BS**- Linear Algebra, Differential Equations and Multi-variable Calculus courses to the **BS** students of National University of Computer and Emerging Sciences (FAST), Lahore, Pakistan.
NCBA&E	**BS**- Business Mathematics, Calculus and Linear Algebra to the **BS** students of National College of Business Administration and Economics (NCBA&E), Lahore, Pakistan.
BHI University	**BS**- Discrete Mathematics course taught to the **BS** students at Beaconhouse Informatics University (BHIU), Gulberg II, Lahore, Pakistan.
UET Taxila	**BS**- Numerical Analysis, Complex analysis, Mechanics, Laplace Transform, Fourier Transform in the Departments of Electrical, Mechanical and Civil Engineering at University of Engineering and Technology (UET), Taxila, Pakistan.
RIET	**BS**- Linear Algebra and Differential Equations at Royal Institute of Engineering and Technology (RIET), Gulberg III, Lahore, Pakistan.
E&ME	**BS**- Calculus-I at NUST College of Electrical and Mechanical Engineering (E&ME) Rawalpindi, Pakistan.

Administrative Assistance

May 2024-todate	Member, Board of Faculty of Sciences, University of the Punjab, Lahore, Pakistand
Apr. 29, 2022-todate	Member Technical Committee, Department of Mathematics, University of the Punjab, Lahore.
Apr. 10, 2015-2020 and 2024-todate	Member Departmental Doctoral Programme Committee (DDPC), Department of Mathematics, University of the Punjab, Lahore.
2004-todate	Member Academic Staff Association, University of the Punjab, Lahore.
2004, 2006-2010, 2013-2015, 2017-todate	Member Departmental Purchase Committee, Department of Mathematics, University of the Punjab, Lahore.
2013-2015	Member Board of Studies, Department of Mathematics, University of the Punjab, Lahore.
2006	Member, Board of Faculty, University of the Punjab, Lahore.
Mar. 2007-10	Member, Departmental Scholarship Committee, University of the Punjab, Lahore.
2005	Revised BS 4-years Syllabi, University of the Punjab, Lahore.
2004	Coordinator Departmental Library, University of the Punjab, Lahore.
24-08-2004	Department nominated as Volunteer Mentor Science Education Project.
2004 & 2007	Coordinator MSc Program), University of the Punjab, Lahore, Pakistan.
2004 & 2007	Coordinator BSc (Honors) Program, University of the Punjab, Lahore.
2004 & 2007	Member Departmental Examination Committee, University of the Punjab, Lahore.
2004	Assistant Editor Punjab University Journal of Mathematics, University of the Punjab, Lahore.
2001	Member & General Secretary Board of Studies, Department of Mathematics GC University, Lahore.
2001	Member, Disciplinary Committee, GC University, Lahore.
2001	Incharge Departmental Seminars, Department of Mathematics, GC University, Lahore.
Aug. 30, 1997 -June 27, 1998	Controller of Examinations, Government College Pir Phulahi, Chakwal, Pakistan.
May 25, 1996-Aug. 29, 1997	Resident Tutor, Boys Hostel, University of Engineering and Technology (UET), Texila, Pakistan.

Language Skills

English	Proficiency in reading, writing and speaking
Urdu	Native
Punjabi	Mother tongue

References

1 Prof. Dr. Muhammad Akram, Chairman, Department of Mathematics, University of the Punjab, Lahore, Pakistan.
Email: makram.math@pu.edu.pk

2 Prof. Dr. Bilal Masud, (Professor & Director (R)) Center for High Energy Physics, University of the Punjab, Quaid-e-Azam Campus, Lahore-54590.
Email: bilalmasud.chep@pu.edu.pk

3 Prof. Dr. M. Ziad, Department of Mathematics and Statistics, College of Science, Sultan Qaboos University, PO Box 36, Alkhod, PC 123, Sultanate of Oman.
Email: mziad@squ.edu.om

Publications and Work in Progress

Published Work

[1] Daud Ahmad and Mariyam Ehsan Buttar- *Optimal Control, Construction, and Analysis of λ-Bernstein Bézier Surfaces* (Accepted)

[2] Sadia Bashir, Daud Ahmad and Ghada Ali. Exploring q-Bernstein-Bézier surfaces in Minkowski space: Analysis, modeling, and applications. PLoS ONE 19(5): e0299892.
https://doi.org/10.1371/journal.pone.0299892.
Published: May 30, 2024 - Impact Factor: 2.9

[3] Aneela, Muhammad Khalid Mahmood, and Daud Ahmad. Order structured graphs of cyclic groups and their classification. VFAST Transactions on Mathematics, 12(1):220233, May 2024.
https://doi.org/10.21015/vtm.v12i1.1756.
Published: May 14, 2024

[4] Maham Ilyas and Daud Ahmad. Stability analysis of anisotropic stellar structures in $f(R)$ gravity. Chinese Journal of Physics, 2024.
https://doi.org/10.1016/j.cjph.2024.02.015.
Published: April 01, 2024 - Impact Factor: 4.6

[5] Sadia Bashir and Daud Ahmad. Geometric analysis of non-degenerate shifted-knots Bézier surfaces in Minkowski space. PLOS ONE, 19(1):1–28, 01 2024.
https://doi.org/10.1371/journal.pone.0296365.
Published: January 03, 2024 - Impact Factor: 2.9

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https://doi.org/10.1142/S0217979223502879. Published: December 30, 2023 - Impact Factor: 2.6

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Work in Progress

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[3] Daud Ahmad and Muhammad Awais- *Gogoi-Goswami $f(R)$ Gravity Model- Stability Analysis of Compact Stars* (Submitted)

[4] Daud Ahmad and Maham Ilyas- *Compact stars in Rastall gravity* (In process for submission)

[5] Daud Ahmad and Ansa Samer - *Exploring Optimal Geometric Configurations and Characteristics of (p,q)-Bernstein Bézier Surfaces*(In process for submission)

[6] Daud Ahmad and Asad Rafique - *Investigating (p, q)-Bernstein Bézier Surfaces: Geometric Properties and Surface Energy Minimization in 3-D Pseudo Euclidean Space* (In process for submission)

[7] Daud Ahmad and Sadia Bashir, *Geometric Analysis of Optimal Toric Bézier Surfaces* (In process for submission)

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[11] Daud Ahmad and Sadia Bashir, *Timelike and Spacelike q-Bernstein Bézier Surfaces in Minkowski Space* (In process for submission)

[12] Daud Ahmad and Asma, *q-Bernstein Quasi-Minimal Surfaces as the Extremal of Dirichlet Functional* (work in progress)

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