Farzana Hussain, Ph.D.
Professor and Chair of Mathematics
Huston Tillotson University
900 Chicon Street, Austin TX 78702
Phone: 512 505 6454 (o) 737 342 5818 ©
Emails: fhussain@htu.edu; farzanahsn@gmail.com

http://www.linkedin.com/in/farzanahussain/
https://htu.academia.edu/FarzanaHussain
https://www.researchgate.net/profile/Farzana_Hussain5
https://orcid.org/0000-0002-8940-2967

CAREER SUMMARY

I am a mathematician with twenty-seven years of proven teaching experience in both private and public universities in the USA and Bangladesh. Holding an advanced degree in Applied Mathematics, I possess equal competence in teaching and research. I am an enthusiastic educator capable of thriving in diverse teaching environments. My proficiency in combining a hands-on teaching approach with effective interpersonal skills consistently generates high-performance learning outcomes. I am adept at working in fast-paced environments, both as an individual performer and as a team player.

Specialties:

- College Algebra
- Linear Algebra
- Calculus (Differential and Integral)
- Number Theory
- Numerical Analysis
- Dynamic Meteorology
- Programming with
    Fortran, C++, Python, R
- Introductory Statistics
- Differential Equation
- Finite Element Method
- Mathematics for Business and Economics
- Business Calculus
- Curriculum Development
- Data Science, Machine Learning
- Advanced Research in Computational Mathematics, Data Analytics

WORK EXPERIENCE

Huston-Tillotson University, Austin TX.
Professor and Chair of Mathematics   From 08/2024 to present

Huston-Tillotson University, Austin TX.
Associate Professor and Chair of Mathematics   From 08/2020 to 07/2024

Huston-Tillotson University, Austin TX.
Assistant Professor of Mathematics   From 08/2016 to 08/2020

Austin Community College District, Austin, TX.
Associate Professor Adjunct, Department of Mathematics   From 08/2018 to present

East Austin College Prep, Austin, TX.
Mathematics Teacher   From 08/2015 to 06/2016

Austin Independent School District, Austin, TX.
Mathematics Teacher   From 08/2014 to 06/2015

Shahjalal University of Science and Technology, Bangladesh.
Associate Professor of Mathematics   From 08/2013 to 05/2014

Shahjalal University of Science and Technology, Bangladesh.
Assistant Professor of Mathematics   From 08/2003 to 08/2013

Shahjalal University of Science and Technology, Bangladesh.
Lecturer of Mathematics   From 08/1998 to 08/2003

EDUCATION

Doctor of Philosophy (Ph.D.) in Mathematics (2014)
Shahjalal University of Science and Technology; Sylhet, Bangladesh.

Master of Science in Mathematics (1996)
Shahjalal University of Science and Technology; Sylhet, Bangladesh.

Bachelor of Science in Mathematics (1995)
Shahjalal University of Science and Technology; Sylhet, Bangladesh.

CERTIFICATION

Standard Texas Teacher Certificate on Mathematics 7-12, Region XIII Educator Certification Program (**2016**).

IBM Data Science Specialization Professional Certificate, IBM Skills Network offered by Coursera (2022).

IBM Data Analyst Specialization Professional Certificate, IBM Skills Network offered by Coursera (2022).

AI for Advances in Optimization, offered by AI institute for Advances in Optimization (ai4opt.org), Georgia Institute of Technology, (2022-25).

Apple Teacher Certification (2020).

Amazon Machine Learning Part I, II Certification for Teachers (2024)

RESEARCH FIELD

Numerical Analysis, Finite Element Method, Dynamic Meteorology, Fluid Dynamics, Data Science, Machine Learning, Artificial Intelligence.

My Ph.D. research works are on the use of Finite Element Method in Applied Mathematics and Computational Engineering. In my research, I developed an integrated algorithm and analysis environment for this methodology in which both accuracy and efficiency requirements of the numerical techniques are explicitly satisfied.

I also have contributed to research on prediction of water levels associated with a tropical storm as well as regular tide along the Head Bay of Bengal region. For this purpose, I developed two different types of shallow water models using finite difference method with a curvilinear and an elliptic grid system. My current goal is to develop similar models for the coastal region of USA, especially to the Gulf of Mexico which is frequently getting effected by tropical cyclones associated with surge.

Recently, I started working on Data Science, AI, ML. I have completed several certificate courses of IBM skills networks offered by Coursera and AI institute for Advances in Optimization offered by Georgia Institute of Technology. I am also doing research on the application of AI and ML in facing disparities and inequities in the health sector under the AIM-AHEAD program of NIH. My current goal is to introduce myself, my institution, my students in the career and research field of DS, AI and ML. Currently, I am working on designing Minor and Certificate program on DS, AI and ML at the Mathematics Department of Huston-Tillotson University.

COMPUTER SKILLS AND KNOWLEDGE

Programming in ForTran, C++, Python, R, LaTex. Graphing and Plotting data with TechPlot, GnuPlot. Microsoft Office Applications (Word, Excel, PowerPoint), Windows Operating Systems.

COMMITTEE SERVICE

Secretary of Faculty Senate, Huston Tillotson University, August 2022 to present.

Faculty Advisor, HT Mathematics and Data Science Club and National Students Data Corps HT chapter, March 2023 to present.

Member of Academic Council, Quality Enhancement Program, Educational Policy Council and Students Persistence Sub-committee (2016 – present).

Standing Committee of Convocations and Assemblies at Huston-Tillotson University (2016 – 2024).

Alumni Advisor, National Students Data Corps, Shahjalal University chapter, July 2023 to present.

Curriculum and Syllabus Development Committee at Shahjalal University of Science and Technology, Bangladesh (2003-2014).

Remuneration and Bill Process Sub-Committee of Admission Test, Shahjalal University of Science and Technology, Bangladesh (2003-2014).

Graduate Studies Committee (GSC) for M.Sc./M.S. at Department of Mathematics, Shahjalal University of Science & Technology, Bangladesh (2003-2014).

Mathematics Association - Shahjalal University of Science and Technology, Bangladesh (1993-2014).

PROFESSIONAL AFFILIATION

American Mathematical Society.

Mathematical Association of America.

Member of Society for Industrial and Applied Mathematics.

Bangladesh Mathematical Society.

Asian Council of Science Editors.

LIST OF PUBLICATIONS

1.   A Shallow Water Model for Estimating Water Level During Tropical Storms Along the Coast of Bangladesh, in collaboration with authors: Dr. Shihan Miah, Mohammed Nasimul Haque, Farzana Hussain, PhD, Mohammed Mizanur Rahman, PhD, Manuscript Number: OCEMOD-D-24-00052, Journal: Ocean Modelling. **(in process)**

2.   A Symmetric Extended Gaussian Quadrature Formula for Evaluation of Triangular Domain Integrals, (**2020**), Journal of Applied Sciences, vol 20(4), pg 145- 158.

3.   Estimation of Maximum Water Levels Along East Coast of India due to Interaction of Storm Surge and Tide– Application to Cyclone Phailin -2013**, (2019),** Journal of Engineering Mathematics & Statistics, Volume 3 Issue 1, pg 22 – 41.

4.   Solution of Shallow Water Equations using Elliptic Grid System to Predict the Maximum Storm Surges along the Head Bay of Bengal- Application to Cyclone Sidr -2007 and Aila -2009, (**2019**) Journal of Engineering Mathematics & Statistics, Volume 3 Issue 1, pg 42 – 64.

5.   A Transformed Coordinate Model to Predict Tide and Surge Along the Head Bay Of Bengal-Application To Cyclone Of 1991 And 1970, (**2015),** GANIT J. Bangladesh Math. Soc. (ISSN 1606-3694), Vol 35, pg 7-25.

6.   Efficient Gauss Quadrature Rules for Tetrahedral Domain Integrals, (**2014),** Journal of Advanced Mathematics and Applications, Publisher**:** American Scientific Publishers, Volume 3, Number 1, pg 74-88(15).

7.   A Transformed Coordinates Shallow Water Model in Boundary-fitted Curvilinear Grids for the Head Bay of Bengal, (**2013)**, East Asian Journal on Applied Mathematics, vol 3(1), pg 27-47.

8.   A Boundary-fitted Shallow Water Model to Simulate Tide and Surge for The Head Bay of Bengal Application to Cyclone Sidr-2007 and Aila- 2009 (**2013**), International Journal of Mathematical Modeling & Computations, vol 3, No 4, Pg 275-297.

9.   Accurate Evaluation Schemes for Triangular Domain Integrals, (**2012)**, IOSR Journal of Mechanical and Civil Engineering, Vol 2, No 6, Pg 38-51, ISSN: 2278-1684.

10.   Appropriate Gaussian quadrature formulae for triangles, (**2012**), International Journal of Applied Mathematics and Computation, Publisher: Darbose, vol 4, no 1, pg 024-038, ISSN 0974 - 4665 (print version), ISSN 0974 - 4673 (electronic version).

11.   Evaluation of triangular domain integrals by use of Gaussian quadrature for square domain integrals, (**2010**), 'SUST Studies'- Journal of Shahjalal University of Science and Technology, Vol 12, No 1, pg 52-57.

12.   An accurate evaluation procedure of triangular domain Integrals, (**2010)**, 'SUST Studies'- Journal of Shahjalal University of Science and Technology, Vol 12, No 1, pg15-20.

13.   Investigation of Various Aspects of Storm Surges along the Coast of Bangladesh using a Transformed Coordinate Shallow Water Model, (**2004**), Ganith - Journal of Bangladesh Mathematical Society, Vol. 24, pg 1-12.

14.   A Nearly Orthogonal 2d Grid System in Solving the Shallow Water Equations in the Head Bay of Bengal, (**2001**), The Abdus Salam International Centre for theoretical Physics (United Nations Educational Organization and International Atomic Energy Agency), Vol. IC/2001/162, pg 1-25.

15.   A Transformed Coordinates Shallow Water Model in Boundary-Fitted Curvilinear Grids for The Head Bay of Bengal (**2001**), The Abdus Salam International Centre for theoretical Physics (United Nations Educational Organization and International Atomic Energy Agency), Vol. IC/2001/161, pg 1-28.

16.   Efficient Integration Schemes and Algorithms for Finite Element Domain Integrals- An Application to Computational Engineering Science (**2014**), Shahjalal University of Science and Technology, Sylhet-3114, Bangladesh. **Ph.D. DISSERTATION**

WORK AUTHORIZATION

US Citizenship.

WORKED PROJECTS

"HT-CUREC: Huston-Tillotson Course-based Undergraduate Research Experiences and Career-Pathways in Mathematics" supported by 'Center for Undergraduate in Mathematics' project of National Science Foundation (2020-2021).

'The Higher Education Quality Enhancement Project' of 'University Grant Commission, Bangladesh' (2009 – 2014) at Department of Mathematics, Shahjalal University of Science and Technology, Bangladesh.

'Prediction of Storm Surges along the Head Bay of Bengal' Jointly Supported by 'United Nations Educational Scientific and Cultural Organization' and 'International Atomic Energy Agency' (1998-2001), a joint work of Department of Mathematics, Shahjalal University of Science and Technology, Bangladesh and The Abdus Salam International Centre for Theoretical Physics, Trieste, Italy.

Trainings, CONFERENCE and WORKSHOPS

Trainings:
1. Harassment & Discrimination Prevention, August 2024 (ACC Compliance Training)
2. Active Shooter Training Transcript, August 2024 (ACC Compliance Training)
3. ADA Awareness, August 2024 (ACC Compliance Training)
4. Title IX and Sexual Misconduct Training, August 2024 (ACC Compliance Training)
5. AWS ML Bootcamp Part II Certificate, July 2024
6. AWS ML Bootcamp Part I Certificate, March 2024
7. Unconscious Bias Course certificate, March 2023
8. Open Data Science, AI, ML certificate, March 2023
9. VADSTI Data Science Training Program, March 2023
10. AI4OPT Statistics with Python, July 2022
11. AI4OPT Data Mining and Engineering, July 2022
12. Featured in AI4OPT newsletter november-2022
13. AIM-AHEAD Reviewer Certificate, August 2023
14. Apple Teacher Certificate, March 2020
15. Blackboard LMS Certificate, March 2020
16. CANVAS LMS certificate, July 2020
17. Certificate of Asian Council for Scientific Editor, December 2021
18. ELSEVIER Peer reviewer certificate, 11 modules, March 2020
19. Collaborative Institutional Training Initiative (CITI) on **Human Research**, Dec 2022
20. Collaborative Institutional Training Initiative (CITI) on **Responsible Conduct of Research**, Sep 2020
21. Collaborative Institutional Training Initiative (CITI) Transcript, Sep 2020
22. Collaborative Institutional Training Initiative (CITI) Transcript, Dec 2022
23. FERPA (Education) 2019
24. Security Awareness Training 2019
25. Focused Online Collaborative Interactions, (Online teaching) 2020
26. Focused Online Collaborative Interactions (STATISTICS) 2021
27. Grant Proposal Writing Part I & II, 2020
28. Texas Teacher Certificate 2016
29. NSDC Chapter Certificate Shahjalal University of Science and Technology (SUST)
30. NSDC Chapter Certificate - Huston-Tillotson University
31. Quality Matters PD Completion Certificate
32. IBM Data Science specialization Professional Certificate 2022 Link: Coursera | Online Courses & Credentials From Top Educators. Join for Free | Coursera
33. IBM Data Analytics specialization Professional Certificate 2022 Link: Coursera | Online Courses & Credentials From Top Educators. Join for Free | Coursera
34. List of PDs 2020-21
35. List of PDs 2018-19
36. LinkedIn Certificate on Python (3 courses)

Presentations:
1. Research Presenter at NIH AIM-AHEAD annual meeting, Bethesda, MD August 1-3, **2023**
2. UpLevyl.AI Living room talk-show presenter 'Women in AI: the social and cultural biases, Disparities, inequity women are facing everyday', October 17, 2023.
3. HT – CAIT Power professional series presenter, September 2023
4. AI4OPT course presentations on Statistics with Python, Data Mining July 2022
5. Research presenter at UT Austin, March 7, 2020
6. Featured in AI4OPT Newsletters:

    [THE MONTHLY OPT-IN ONLINE NEWSLETTER NOV (ai4opt.org)](), 2022

    [THE MONTHLY OPT-IN ONLINE NEWSLETTER JULY (ai4opt.org)]() 2023

Workshops, Conferences:
1. Joint Mathematics Meetings of MAA & AMS **2020, 2021**
2. Artificial Intelligence for Advances in optimization, Georgia Institute of Technology, Four-weeks summer faculty training, June **2022, 2023**
3. AI4OPT Faculty weekly Training, every Friday, **Fall 2022-Spring 2023**.
4. AIM-AHEAD Leadership weekly Training, every other Friday, **Fall 2022-Spring 2023**.
5. CTXMAT Central Texas Math Summit Preparatory workshop organized by Charles A Dana Center, University of Texas at Austin, and E3 Alliance, **2020, 2021, 2022, 2023**.
6. Teaching, Advising, Alignment and Scaling – Central Texas Math Alignment Group, Charles A Dana Center, University of Texas at Austin, online semester long workshop, Fall **2020, 2021, 2022, 2023.**
7. LILLY AUSTIN Educator Conference, Austin TX, January 9-11, **2020, 2021, 2022, 2023**.
8. Research Presenter at Texas Differential Equation Conference 2020, University of Texas at Austin, March 7-8, **2020**.
9. Project presenter at STEM-US Sustaining HBCU Excellence Through Collaboration Conference, Morehouse College, Atlanta, Georgia, July 11-12, **2019**.
10. AMS Department Chair workshop 2021
11. AMS short course on Data Driven Modeling 2021
12. AMS short course on Data Ethics 2021
13. AIM-AHEAD Leadership Certificate, 2023
14. SIMIODE workshop on Differential Equations Modeling, 2021
15. EdCamp at Region 13 Education Service Center, Austin, TX, December 01, 2018.
16. Workshop on Teaching Mathematics in Undergraduate and Graduate Level: Planning and Development, Shahjalal University of Science and technology, Sylhet, Bangladesh, June 28, 2018.
17. Texas Undergraduate Math Conference, Lamar University, Beaumont, TX, October 8, 2016.
18. International Conference of Applied Mathematics & Mathematical Physics-2012, Jahangir Nagar University, Savar, Dhaka, Bangladesh, 2012.
19. International Conference of Applied Mathematics & Mathematical Physics-2004, Shahjalal University of Science and technology, Sylhet, Bangladesh, 2004.

20. International Conference of Applied Mathematics & Mathematical Physics-2000, Shahjalal University of Science and technology, Sylhet, Bangladesh, 2000.
21. International Workshop on Applied Mathematics Finite Volume Method– 1998, Dhaka University, Bangladesh, 1998.
22. International Workshop on Applied Mathematics – 1998, Shahjalal University of Science and technology, Sylhet, Bangladesh, 1998.

HONORS and AWARDS

Propel HBCU Faculty Fellowship (2024-25).

AIM-AHEAD Leadership Fellowship (2022-23)

AI for Advances in Optimization Scholarship (2022-2025).

Center for Undergraduate Research in Mathematics Scholarship (2020-21)

HT Golden Apple Teacher Award 2021, 2022.

University of Texas Austin, Charles A. Dana Center Scholarship 2021.

University of Texas Austin, Charles A. Dana Center Scholarship 2020.

HT Golden Apple Teacher Award 2020.

Bangladesh University Grant Commission Scholarship (2009 – 2014).

Shahjalal University of Science and Technology Undergraduate Scholarship (1994-96).

REFERENCES

Ahmed Kamalvand, PhD
Professor
Department of Mathematics
Huston-Tillotson University
900 Chicon Street, Austin, TX 78702
Phone: (512) 505 6455
E-mail: aakamalvand@htu.edu

Michael L. Hirsch, Ph.D.
Professor of Sociology
Dean of the College of Arts & Sciences
Huston-Tillotson University
900 Chicon
Austin, TX 78702
512.505.6431