Dr. Amna Shabbir

Assistant Professor
Electronic Engineering Department
NED University of Engineering and Technology,
University Road, Karachi, 75270, Pakistan.

+92 21 99261261 ext. 2215 (Office)
+92 3343758504 (Mobile)
aamna@cloud.neduet.edu.pk

HEC Approved Supervisor

Profile

Accomplished educator and researcher specializing in wireless communication and electronic engineering. Expertise in teaching, motivating, and directing students to achieve high academic standards. Proven ability to interact with diverse student populations and maintain excellent relations with faculty and administrators. Strong organizational and leadership skills, committed to advancing educational and research excellence.

Academic Qualification

2024 **Post-Doctoral Research Fellow:** Design and Performance Analysis of Wireless Network, Multimedia University, Malaysia.

2019 **Ph. D:** Energy Efficient Heterogeneous Network Optimization, NED University.

2009 **M.E:** Digital Signal Processing application in communication Systems, NED University.

2006 **B.E:** Telecommunication Engineering, NED University.

Work Experience

2019 – Present Assistant Professor, Electronic Engineering Department, NED University.

2007 – 2019 Lecturer, Electronic Engineering Department, NED University.

2007 Technical Knowledge Engineer, Etilize Pakistan.

Departmental Strategic Planning (2024–2029)

Jan 2025 Assisted the Chair, Electronic Engineering Department, NED University, in developing a Strategic Management Plan (2024–2029) by aligning departmental goals with the university vision, analyzing performance, setting measurable objectives, and formulating actionable strategies for academic, research, and professional growth.

Leadership and Organizational Experience

28 Dec 2024	**Silver Jubilee Event Coordinator** Successfully organized the Silver Jubilee event for the Electronic Engineering Department, bringing together over 100 alumni from around the globe. Alumni proactively reached out with pledges to support the establishment of a Robotics Lab, smart classroom equipment, and PLC lab upgrades. Discussions are ongoing for additional contributions, strengthening alumni relations, and enhancing departmental infrastructure.
2021 – Present	**Member, FYP Steering Committee** Guiding FYP proposal evaluations and ensuring quality as per OBE standards.
2022 – 2025	**In-Charge, Girls Affairs Society** supports and empowers female students through targeted initiatives.
2024 – Present	**Member, Team Outcome-Based Education (OBE)** played a key role in OBE implementation, including leading the Corrective Action Report (CAR) process. Contributed to securing a **4-year accreditation** for the Electronic Engineering Department.
July 2024 – Jan2025	**F Y D P Coordinator** Overseeing the planning, submission, and evaluation of Final Year Design Projects.
2011	**Faculty In-Charge, CONNECT 2011** represented the Electronic Department held at Expo Center Karachi, where students showcased FYP posters alongside national/international universities.
Jan 2023–Oct 2024	In-Charge, PhD Lab.
Oct 2024 –May 2024	In-Charge, BEL Lab II.
Jan 2016 – Dec 2017	In-Charge, Industrial and Power Electronics Lab.
Feb 2007– Dec 2015	In-Charge, PLC Lab.
Jan 2009 – Dec 2012	Class Advisor, Final Year Electronic Engineering.

Curriculum Design

Designed and developed the **Undergraduate Diploma Programme** in Electronic Engineering & Applied Technologies (CCEE, NED University), aligning curriculum with industry needs and emerging technologies.

Research and Travel Grants:

1. Secured HEC Travel Grant (2017) to represent NED University at ICCSS, IEEE 2017, London, UK – **PKR 0.3 million**.
2. Secured HEC Travel Grant (2018) to represent NED University at ICCOINS, IEEE 2018, Kuala Lumpur, Malaysia – **PKR 0.22 million**.
3. Empowering Sindh's Universities: Local Solutions for Ethical AI Adaptation Sindh HEC Research Grant 2023-24 (Under Evaluation) – **PKR 3.6 million**.
4. Smart Solar-Powered Portable Water Filtration System for Sindh U/R Areas Sindh HEC Research Grant 2023-24 (Under Evaluation) – **PKR 2.47 million**.
5. Solar-Powered Prosthetic Arms. Sindh HEC (Under Evaluation) – **PKR 3.46 million**.

Research Publications

Journal Publications

1. **Amna Shabbir**, et al. "Optimized energy management and small cell activation in ultra-dense networks through a data-driven approach." *PeerJ Computer Science (2024)* **(Q1, IF 3.8)**
2. **Amna Shabbir**, et al. "Maximizing energy efficiency in HetNets through centralized and distributed sleep strategies under QoS constraint." ***Nature Scientific Reports*** (2024). **(Q1, IF 3.8)**
3. **Amna Shabbir,** et al. "Beyond boundaries: Navigating the positive potential of ChatGPT, empowering education in underdeveloped corners of the world." *Heliyon* (2024). **(Q1, IF 3.4)**
4. **Amna Shabbir**, et al. "Energy Efficiency and Load Optimization in Heterogeneous Networks through Dynamic Sleep Strategies: A Constraint-Based Optimization Approach." *Future Internet* (2024) **(Q1, IF 2.8)**
5. **Amna Shabbir**, et al. "Optimizing energy efficiency in heterogeneous networks: An integrated stochastic geometry approach with novel sleep mode strategies and QoS framework." *Plos one* (2024) **(Q1, IF:3.7)**
6. Hashmi, S. Azam, **Amna Shabbir**, S.A. Mohsan, M. Hadjouni, and Samih M. Mostafa. "Parametric Classification of Furniture from Point Cloud Developed using Low-Cost Trolley based Laser Scanning System." *IEEE Access* (2023) **(Q1, IF:3.47)**

7. H. Naureen, S. Rizvi, and **Amna Shabbir**. "A Clustered PD-NOMA in an Ultra-Dense Heterogeneous Network with Improved System Capacity and Throughput." Applied Sciences (2022) **(Q3, IF:2.84)**
8. Muhammed Ali Akhtar, **Amna Shabbir**, Najmi G.Haider, Maria Andleeb, Syed Abbas Ali, Safdar Rizvi, "Virtual Reality in Gymnasium: Stationary bike using Hall-Effect Sensor and Bluetooth BLE", IJCSNS International Journal of Computer Science and Network Security, VOL.22 No.5, May 2022 **(HEC/ISI Indexed)**
9. N. Farhan, S. Rizvi, **Amna Shabbir**, I..Memon, "Clustering Approaches for Efficient Radio Resource Management in Heterogeneous Networks' VFAST Transactions on Software Engineering Vol 9, No 3. 2021. **(HEC/ISI Indexed)**
10. M. Azhar, **Amna Shabbir**, "5G Networks: Challenges and Techniques for Energy Efficiency", Engineering, Technology & Applied Science Research Journal, Vol. 8, No. 1. 2018. **(HEC/ISI Indexed)**
11. **Amna Shabbir**, HR Khan, SA Ali, S. Rizvi, 'Design and Performance Analysis of Multitier Heterogeneous Network through Coverage, Throughput, and Energy Efficiency" ETASR Journal Vol. 7, No. 6. 2017. **(HEC/ISI Indexed)**
12. **Amna Shabbir,** M. Azhar, and A. Aziz, "Smart Power Management with Small Cells: A Path to Sustainable Data Connectivity," International Journal of Innovations in Science & Technology Vol. 7. 2025. **(HEC Indexed)**
13. K. Laeeq, M. A. Abbasi, **A. Shabbir**, A. A. Khan, and H. Habib, "E-Lock: A Blockchain Framework for Enhancing Security and Trust in E-Learning," *International Journal of Artificial Intelligence & Mathematical Sciences.* Vol.2 2024 **(HEC Indexed)**
14. **Amna Shabbir**, HR Khan, SA Ali, S Rizvi,' A Stochastic Geometrical Approach for Performance Analysis of Heterogeneous Cellular Network' International Journal of Computer Science and Information Security, Aug 2016, volume 14, issue 8, pp467-475**. (ISI Indexed)**
15. S. Rizvi, **Amna Shabbir**, Asif Aziz, S Rizwan Ali, Ghulam Muhammad, Shujaat H Butt, 'A Proactive RSS Based Vertical Handoff Protocol for Next Generation Wireless Heterogeneous Network', Sept 2016, IJCSIS, Vol 14, issue 9. **(ISI Indexed)**
16. Attaullah Khawaja, **Amna Shabbir** "Sum Capacity with Regularized Channel Inversion in Multi antenna Downlink Systems under Equal Power Constraint"

International Journal of Computer and Information Engineering Vol: 2, No: 1, 2015.

Conferences

17. M. Azhar, **Amna Shabbir**, T.Malik 'A Traffic Variation Aware Approach for Energy Efficient Heterogeneous Cellular Networks', International conference on emerging trends in telecommunication and electronics engineering ICE(TE)2 2018, Karachi, Pakistan.
18. **Amna Shabbir**, H. R. Khan, and Syed Abbas Ali. "A Traffic Load Aware Approach for Optimum Throughput in 5G Heterogeneous Cellular Networks." 4th International Conference on Computer and Information Sciences (ICCOINS). IEEE, 2018. Kuala Lumpur, Malaysia.
19. **Amna Shabbir**, HR Khan, SA Ali, 'Outage analysis of two-tier heterogeneous cellular network with sleep strategies' Circuits, System, and Simulation (ICCSS). IEEE 2017, London, UK.
20. **Amna Shabbir**, Ali Yasir, "Improving space Time Diversity in a Fixed-Point Link Using LMS Based Interference Cancellers", Digital Content, Multimedia Technology and its Applications (IDC). IEEE 2010, Seoul, Korea.

Awards and Honors

2010	**Best Teacher Award:** Batch of 2006–07, BE Electronics, NED University
2002-2006	**NED Merit Scholarship:** Awarded throughout 4 years of BE at NED University
2002	**Two Gold Medals:** Highest Marks in English & Mathematics, PECHS Government College for Women (Intermediate Level).

Courses Taught

- Basic Electronics
- Electronic Devices and Circuits
- Amplifiers and Oscillators
- Optoelectronics and Microwave
- Antenna and Microwave Engineering
- Fundamentals of Telecommunications
- Communication Systems–II
- Matlab and Simulink
- Digital Signal Processing
- Communication Systems–I
- Fundamentals of Computer Engineering
- Programming Languages

UG Final Year Design Projects (FYDP)

- Heterogeneous Cellular Networks for 4G LTE
- Interference Mitigation in Large Wireless Networks
- Capacity Enhancement in Wireless Networks Using Smart Antennas
- Real-Time Tracking of the Path of a Smart Flying Object
- Future Estimation of the Path of a Smart Flying Object
- Comparison of RLS and LMS Based Algorithms
- Optimization of Energy Storage Systems for Zero Export and Zero Import Electricity in Hybrid Energy Systems
- Progressive Non-Invasive Glucose Observing Framework Utilizing Near Infrared Optical Detection Cancellation in a Fixed Point-to-Point Link
- Solar Power Portable Water Filtration System
- Prosthetic Arm with Renewable Energy and Enhanced Functioning

Graduate Research Projects

- 5G Green Networking: Step Towards Energy and Throughput Maximization
- Residential Community Micro grid Load Scheduling and Management System Using Cooperative Game Theory (External Examiner, Mehran University of Engineering and Technology, Jamshoro
- Multi-Agent Based Load Scheduling and Management System in a Residential Micro grid Using Cooperative Game Theory (External Examiner, Mehran University of Engineering and Technology, Jamshoro)

References

- **Prof. Dr. Abdul Qadir**
  Professor and Provost, UIT University, Karachi, Pakistan
  Email: aqadir@uit.edu

- **Dr. Hashim Raza Khan**
  Associate Professor,
  Electronic Engineering Department, NED.
  Email: hashim@cloud.neduet.edu.pk