DR ZOHAIB AKHTAR

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PROFILE:

Experienced educator with over 16 years of teaching, research, and academic leadership in engineering education, with a strong track record in digital innovation, curriculum design, and student-centred learning.

MEMBERSHIPS:

Senior Member, IEEE (SMIEEE); Senior Fellow, Advance HE (SFHEA); Member, Institution of Engineering and Technology (MIET); Chartered Engineer (CEng), Engineering Council UK; Professional Engineer (PE), Pakistan Engineering Council

EDUCATION:

Sep 2019 -to- Oct 2024 — MASTER OF EDUCATION (MED), UNIVERSITY LEARNING AND TEACHING, IMPERIAL COLLEGE LONDON, UK

- YEAR 3 THESIS TITLE: Evaluating the Effectiveness of Digital Midterm Assessments in Enhancing Student Learning
- YEAR 2 MODULES: Engaging with Educational Literature, Writing Critically in Education, Library Project: Are e-Assessments the Future of Assessments for Engineering Students?
- YEAR 1 MODULES: How Students Learn, Educational Supervision, Digital Learning, Assessment and Feedback, Reflection on Changing Practice

Sep 2013 -to- Nov 2017 — DOCTOR OF PHILOSOPHY (PHD), ELECTRICAL AND ELECTRONIC ENGINEERING, IMPERIAL COLLEGE LONDON, UK

- RESEARCH GROUP: Control and Power
- THESIS TITLE: Distributed Voltage Control and Demand Response
- SUPERVISOR: Dr Balarko Chaudhuri

Nov 2008 -to- Oct 2011 — MASTER OF SCIENCE (MSC), ELECTRICAL ENGINEERING (POWER SYSTEMS), UNIVERSITY OF ENGINEERING AND TECHNOLOGY (UET), LAHORE, PAKISTAN*, AND UNIVERSITY OF PADERBORN, GERMANY (SPLIT RESEARCH)

*UET Lahore is the oldest, largest, and top-ranked public sector engineering university in Pakistan

- THESIS TITLE: Design of Protection Scheme for Microgrids with Multiple Distributed Generation Units
- MARKS: 90.20 %

Sep 2004 -to- Aug 2008 — BACHELOR OF SCIENCE WITH HONOURS (BSC HONS), ELECTRICAL ENGINEERING (POWER), UNIVERSITY OF ENGINEERING AND TECHNOLOGY (UET), LAHORE, PAKISTAN

- MARKS: 88.98 % (Ranked 1st out of 130 students)
- GOLD MEDAL: Awarded a **Gold Medal** by the Prime Minister of Pakistan for securing 1st position in Electrical Engineering specialization in Power Systems on the 19th Convocation of UET Lahore

REFEREED JOURNAL PUBLICATIONS:

Google Scholar Profile: Link

1. M.S. Javaid, B. Chaudhuri, F. Teng, and **Z. Akhtar**, "EMT-RMS Modeling Trade-off for IBR-Driven Sub-Synchronous Oscillations," *IEEE Transactions on Power Systems*, 2025. Link
2. **Z. Akhtar**, M. Opatovsky, B. Chaudhuri, and S.Y.R. Hui, "Comparison of Point-of-Load vs. Mid-Feeder Compensation in LV Distribution Networks with High Penetration of Solar Photovoltaic Generation and Electric Vehicle Charging Stations," *IET Smart Grid*, vol. 2, no. 2, pp. 283–292, 2019. Link
3. **Z. Akhtar**, B. Chaudhuri, and S.Y.R. Hui, "Smart Loads for Voltage Control in Distribution Networks," *IEEE Transactions on Smart Grid*, vol. 8, no. 2, pp. 937–946, 2017. Link
4. **Z. Akhtar** and M.A. Saqib, "Microgrids Formed by Renewable Energy Integration into Power Grids Pose Electrical Protection Challenges," *Renewable Energy*, vol. 99, pp. 148–157, 2016. Link
5. **Z. Akhtar**, B. Chaudhuri, and S.Y.R. Hui, "Primary Frequency Control Contribution from Smart Loads Using Reactive Compensation," *IEEE Transactions on Smart Grid*, vol. 6, no. 5, pp. 2356–2365, 2015. Link
6. X. Luo, **Z. Akhtar**, C.K. Lee, B. Chaudhuri, S.C. Tan, and S.Y.R. Hui, "Distributed Voltage Control with Electric Springs: Comparison with STATCOM," *IEEE Transactions on Smart Grid*, vol. 6, no. 1, pp. 209–219, 2015. Link

CONFERENCE PUBLICATIONS:

1. M.S. Javaid, B. Chaudhuri, F. Teng, and **Z. Akhtar**, "A Novel Tuning Method of Grid-Forming Inverter Voltage Control," in 2025 IEEE PowerTech, Kiel, Germany, 29 June – 3 July 2025. Link
2. M.S. Javaid, B. Chaudhuri, F. Teng, and **Z. Akhtar**, "Impact of Inner Control in GFM-Induced Sub-Synchronous Oscillations," in 2025 IEEE Power and Energy Society General Meeting (PESGM), Austin, Texas, USA, 27–31 July 2025. Link
3. J. Vochoska, M.S. Javaid, **Z. Akhtar**, and B. Chaudhuri, "Small-Signal Stability of Power Systems with a Mix of Synchronous Generators and Inverter-Based Resources," in IEEE Power and Energy Society ISGT Europe 2023, Grenoble, France, 23–26 October 2023. Link

4. **Z. Akhtar**, S. Alavi, and K. Mehran, "Voltage Control in LV Networks Using Electric Springs with Coordination," in 31st Annual IEEE Canadian Conference on Electrical and Computer Engineering (CCECE), Québec City, Canada, 13–16 May 2018. Link
5. **Z. Akhtar**, B. Chaudhuri, and S.Y.R. Hui, "Smart Loads for Voltage Control in Distribution Networks," in 2016 IEEE Power and Energy Society General Meeting (PESGM), Boston, MA, USA, 17–20 July 2016. Link
6. L. Xiao**, Z. Akhtar**, L. Chi Kwan, B. Chaudhuri, T. Siew-Chong, and S.Y.R. Hui, "Distributed Voltage Control with Electric Springs: Comparison with STATCOM," in 2016 IEEE Power and Energy Society General Meeting (PESGM), Boston, MA, USA, 17–20 July 2016. Link
7. D. Chakravorty, **Z. Akhtar**, B. Chaudhuri, and S.Y.R. Hui, "Comparison of Primary Frequency Control Using Two Smart Load Types," in 2016 IEEE Power and Energy Society General Meeting (PESGM), Boston, MA, USA, 17–20 July 2016. Link
8. **Z. Akhtar**, B. Chaudhuri, and S.Y.R. Hui, "Poster: Smart Loads for Voltage Control in Distribution Networks," in 2015 IEEE Power and Energy Society General Meeting (PESGM), Denver, CO, USA, 26–30 July 2015. Link
9. **Z. Akhtar**, B. Chaudhuri, and S.Y.R. Hui, "Poster: Distributed Voltage and Frequency Control Using Electric Springs," in 2014 IEEE Power and Energy Society General Meeting (PESGM), National Harbor, MD, USA, 27–31 July 2014. Link

Educational Research Publications:

1. **Z. Akhtar** and I. Ntonia, "Evaluating the Effectiveness of Digital Midterm Assessments in Enhancing Student Learning," *Innovations in Education and Teaching International*, 2025. Link [Under review]
2. **Z. Akhtar** and E. Perea-Borobio, "Navigating the Digital Shift: Investigating the Viability of Digital Assessments for Engineering Students," *European Journal of Engineering Education*, 2024. Link
3. E. Perea-Borobio and **Z. Akhtar**, "Enhancing Professional and Engineering Skills via Practical Design Projects for First-Year Electrical and Electronic Engineering Students," in *52nd Annual Conference of the European Society for Engineering Education (SEFI)*, Lausanne, Switzerland, 2–5 September 2024. Link
4. **Z. Akhtar** and E. Perea-Borobio, "Are e-Assessments the Future of Assessments for Engineering Students?" in *51st Annual Conference of the European Society for Engineering Education (SEFI)*, Dublin, Ireland, 11–14 September 2023. Link
5. **Z. Akhtar**, "Identification, Relevance, and Limitations of Threshold Concepts in Electrical and Electronic Engineering," in *IEEE International Conference on Teaching, Assessment, and Learning for Engineering (TALE)*, Hong Kong, China, 4–7 December 2022. Link

Work Experience:

Sep 2025 -to- Present

Principal Teaching Fellow, Imperial College London, United Kingdom

- Lead the delivery of ELEC40002: Analysis and Design of Electrical Circuits, a core Year 1 module with 200+ students, ensuring alignment of lectures, tutorials, labs, and personalised academic support.
- Set direction for the department's digital education strategy as Digital Learning Lead, guiding staff adoption of tools such as Blackboard, Panopto, and Wiseflow to enhance blended and online teaching.
- Shape assessment policy as Assessment and Feedback Lead presenting the department at faculty level, embedding inclusive and evidence-based practices across multiple modules.
- Leading (as PI) the College-funded project *"Transforming Feedback Consistency and Usefulness with LLMs"* (2025–2026), awarded by the *Excellence Fund for Learning and Teaching Innovation*; supervise a Research Assistant, direct technical and pedagogical design, and collaborate with CHERS to develop and evaluate an AI-powered tool that enhances clarity, consistency, and usefulness of student feedback.
- Oversee digital examinations for 1000+ students, coordinating adjustments to meet diverse student needs.
- Mentor MSc/MEng students and supervise industrial placements, ensuring alignment with emerging trends in power systems and the energy transition.
- Represent the department in faculty and college-level groups, influencing institutional strategy on digital education and assessment.

Aug 2020 -to- Aug 2025

Senior Teaching Fellow, Imperial College London, United Kingdom

- Co-designed and delivered ELEC70107: Professional Competencies Portfolio, embedding teamwork, ethics, and reflective practice into the MEng curriculum. Also, co-designed and delivered ELEC40002: Analysis and Design of Circuits.
- Piloted the use of large language models (LLMs) to improve feedback clarity in laboratory courses, achieving measurable increases in student engagement.
- Conducted educational research on digital assessment and pedagogy, publishing in peer-reviewed journals and presenting at international conferences.
- Contributed departmental perspectives to faculty-level digital learning groups, informing college-wide policy on assessment platforms.
- Supervised PhD research on inverter-based power systems and renewable integration; served as external examiner for three PhD theses.
- Led analysis of pedagogical changes within the department, using evidence to refine teaching practice and curriculum design.
- Chaired the Remote Teaching Committee during the COVID-19 pandemic, pioneering drone-based and remote-access labs to sustain hands-on learning.

Oct 2017
-to- Aug 2020

Strategic Teaching Fellow, Imperial College London, United Kingdom

- Delivered theory classes and supervised laboratory sessions across key modules, enhancing student understanding of foundational concepts through engaging and interactive teaching methods.
- Managed the second-year Electronics Laboratory, streamlining operations and introducing innovations that improved hands-on learning and student satisfaction.
- Supervised MSc and MEng theses as well as industrial placements, mentoring students in applying academic knowledge to real-world engineering problems and supporting career development.
- Provided personalized academic and pastoral support through one-on-one tutorials, helping students navigate academic challenges and enhance their wellbeing.
- Led curriculum mapping initiatives to define module-specific learning outcomes and identify links across the program, resulting in improved coherence, progression, and clarity in student learning pathways.
- Oversaw the department's use of Blackboard (VLE), optimizing digital course delivery and providing training and support that improved both staff engagement and the student digital learning experience.

Aug 2018
-to- Dec 2018

Post-Doctoral Research Associate (Part-time), Queen Mary University London, United Kingdom

- Designed a sensing platform to assess the health of power electronic modules within electric vehicle drive systems, integrating multi-physical sensors to generate a spatially sparse image of key measurements, including temperature, electrical parameters (voltage, current, impedance), and mechanical displacement (wire bond movement and device deformity) across varying time scales.
- Collaborated with four universities and two industrial partners

Nov 2017
-to- Apr 2018

Post-Doctoral Research Associate (Part-time), Queen Mary University London, United Kingdom

- Designed advanced control strategies for autonomous operation of AC/DC microgrids, integrating energy storage systems and power electronic compensators for voltage and frequency regulation.
- Successfully completed a project on the coordination of power electronic compensators in distribution systems, enhancing system stability and efficiency.
- Guided and supervised PhD students within the research group, providing mentorship and technical expertise to support their academic progress and research outcomes.

Sep 2013
-to- Aug 2017

Graduate Teaching Assistant / Research Postgraduate, Imperial College London, United Kingdom

- Demonstrated and assessed laboratory sessions, delivered 1st- and 2nd-year Mathematics tutorials, and evaluated presentations and reports for the Professional Engineering course, ensuring practical comprehension of theory while enhancing students' communication and technical writing skills.
- Developed an integrated approach for voltage and frequency control in distribution networks, enabling demand response and supporting increased integration of renewable energy units and electric vehicle charging stations through autonomous control of power electronic compensators.

Sep 2008
-to- Sep 2013

Lecturer / Assistant Professor, University of Engineering and Technology (UET), Lahore, Pakistan

- University of Engineering and Technology (UET), Lahore: The oldest, largest, and top-ranked public-sector engineering university in Pakistan.
- Delivered theory and laboratory classes across all undergraduate years, covering topics such as Circuit Analysis and Design, AC/DC Machines, Power Transmission and Distribution, Electric Machine Design, Power System Protection, Power Systems Operation and Control, and High Voltage Engineering.
- Promoted from Lecturer to Assistant Professor in 2012 in recognition of teaching excellence and academic contribution.
- Supervised final-year student projects, guiding students through applied research and design implementation.
- Conducted insulation testing in the high-voltage laboratory, supporting both academic research and industrial consultancy.
- Organised the departmental timetable, ensuring efficient allocation of teaching resources and room scheduling.
- Served as Hostel Warden for the International Students' Hostel (Iqbal Hall), managing student welfare and residential facilities.

Sep 2009
-to- Feb 2010

Research Assistant, University of Paderborn, Germany

- Conducted research in the LEA Laboratory (Power Electronics and Electrical Drives Lab) on developing a Linear Rail Cab System, leveraging linear induction motor technology and hybrid energy systems with supercapacitors and batteries to optimize performance and energy efficiency.

Jun 2008
-to- Sep 2008

Research Engineer, Pak Elektron Limited (PEL), Pakistan

- Developed an empirical formula to accurately calculate stray losses in power transformers, enhancing efficiency and reliability.
- Conducted high-frequency modeling of power transformers to optimize insulation design and improve performance under various operating conditions.

Awards and Honours:

Aug 2025	Excellence Fund for Learning and Teaching Innovation (2025): Secured £65,000 as Principal Investigator for the project "Transforming Feedback Consistency and Usefulness with LLMs", enabling cross-faculty collaboration and the appointment of a Research Assistant for one year to develop AI-powered tools that enhance the clarity, consistency, and usefulness of student feedback.
Jun 2025	Nomination for President's Award for Excellence: Nominated for the President's Award for Excellence in Supporting the Student Experience. Link
Dec 2024	Department Award for Citizenship and Community 2024: Recognized by colleagues for consistently being available to help and going above and beyond to ensure tasks are completed with excellence. Link
Jun 2023	Senior Fellowship of Advance HE (SFHEA): Awarded based on case studies of introducing online examinations in the department and making teaching more inclusive during the Covid-19 pandemic.
Aug 2021	Inspiration Award 2021: Recognized for outstanding efforts in transitioning the Electrical and Electronic Engineering Department to online teaching and learning. Link
	Teamwork / Collaboration Award 2021: Recognized as a team member of the Project Design Team that developed a remote 2nd-year project. Link
May 2021	Nomination for President's Award for Excellence: Nominated for the President's Award for Excellence in Supporting the Student Experience. Link
Dec 2020	Collaboration Award 2020: Won as a member of the Lab-in-a-Box Design and Strategy Team that created remote learning experiments during the pandemic. Link
Sept 2020	Teamwork Award 2020: Awarded as a member of the Curriculum Review Team for redesigning undergraduate programs in the department. Link
	Teamwork Award 2020: Recognized as a member of the Remote Assessment Team for conducting remote assessments during the Covid-19 pandemic. Link
Jun 2020	Fellowship of Advance HE (FHEA): Awarded based on a teaching statement covering all areas of the UK Professional Standards Framework.
Mar 2020	Charted Engineer (CEng): Awarded Chartered Engineer (CEng) status by the Institution of Engineering and Technology (IET).
Dec 2019	Senior Member of IEEE: Attained Senior Membership status by the IEEE.
Sep 2013 -to- Sep 2016	Commonwealth Scholarship Award: Received the prestigious Commonwealth Scholarship for pursuing a PhD in Electrical Engineering at Imperial College London. Only five scholars were selected for the award out of more than 800 applicants from Pakistan.
Jul 2014, Jul 2015, Jul 2016	Travel grants: • 2016 IEEE Power and Energy Society General Meeting, Washington, DC, USA • 2015 IEEE Power and Energy Society General Meeting, Denver, CO, USA • 2014 IEEE Power and Energy Society General Meeting, Boston, MA, USA
Sep 2012	Social Secretary, Teaching (Academic) Staff Association: Elected as the Social Secretary for UET Lahore's Teaching (Academic) Staff Association by securing 308 out of 450 votes from academic staff members.
Jul 2012	Best Teacher: Ranked 1st out of 43 Electrical Engineering teachers based on undergraduate student evaluation feedback at UET Lahore.
Dec 2010	Gold Medal: Awarded a Gold Medal by the Prime Minister of Pakistan for securing 1st position in Electrical Engineering specialization in Power Systems at UET Lahore's 19th Convocation.
Sep 2009 -to- Feb 2010	EURECA – (European Research and Educational Collaboration with Asia): Received a research grant to conduct postgraduate research at the University of Paderborn, Germany.

References:

1. Prof Balarko Chaudhuri
   Professor, Electrical and Electronic Engineering — Email: b.chaudhuri@imperial.ac.uk
   Imperial College London, United Kingdom — Office: +44-20-7594-6196
2. Prof Christos-Savvas Bouganis
   Director Undergraduate Studies, Electrical and Electronic Engineering — Email: christos-savvas.bouganis@imperial.ac.uk
   Imperial College London, United Kingdom — Office: +44-20-7594-6144
3. Prof Tim Green
   Head of Department, Electrical and Electronic Engineering — Email: t.green@imperial.ac.uk
   University of Hong Kong, Hong Kong — Office: +44-20-7594-6171