Curriculum Vitae

Assistant Prof. Dr. Barkat Ullah

Nationality: Pakistani
Address: Department of Mechanical Engineering, COMSATS University Islamabad, Wah Campus, Wah Cantt, Pakistan
PEC No. Mech2k2 19534
Scopus Author ID: https://orcid.org/0000-0001-7073-6740
Email: barkat@ciitwah.edu.pk
Phone: 00923350912258

FIELD OF EXPERTISE	Design of Underwater Structures, Design and Development of Underwater Vehicles, AUVs Designs, Material Design and Material Processing, Structuring and planning for engineering studies for under and post-graduates, consultation. Outcome Based Educations
RESEARCH INTERESTS	Modelling, simulation and control of autonomous systems, design and motion control strategies for autonomous underwater vehicles, waves, and current modelling and analysis. material design and material processing

EDUCATION

Degree	University/Institution	Duration
PhD	University Technology Petronas, Malaysia	2014-2019
M.Sc	University of Bradford, United Kingdom	2008-09
B.Sc Engg	University of Engineering and Technology, Peshawar	2002-2006

EMPLOYMENT RECORD:

		Organization
Assistant Professor (2020-Present)	Responsibilities	COMSATS University, Islamabad, Wah Campus, Wah Cantt, Pakistan a. Teach undergraduate courses and supervised projects in Mechanical Engineering. b. Supervised undergraduate and postgraduate students - 50 undergraduate students and 6 MSc students. c. Developed scheme of studies for courses of undergraduate and graduate studies as per PEC and HEC requirements. d. Published and presented research findings in journals and conferences – e. Maintained and supervised course folders of the faculty members as per guidelines
	Administrative role	a. Convener course folder committee (2020-Present) b. Convener community services c. Member of graduate advisory committee d. Member of Departmental Evaluation Review Committee (DARC) e. Member Departmental Quality Enhancement Cell (DQEC) f. Member of Board of Studies (BoS), Department of Mechanical Engineering, University of Engineering and Technology Mardan Campus

Graduate Coordinator (2022-Present)

a. To assign and manage courses,
b. Thesis and research proposal defense presentations and management.
c. To track academic progress, and ensuring compliance with the university's graduate handbook.
d. Admissions process regulations

Graduate Research Assistant (2014-2019) — University Technology Petronas, Malaysia

Responsibilities

a. Assist in teaching undergraduate level courses for mechanical engineering students
b. Courses thought include Computer Aided Design (CAD) Programmable Logic Controllers Lab (PLC), Theory of Machines. OBE system.
c. Event management
d. FYP supervision

Lecturer (2007-2014) — COMSATS University, Islamabad, Abbottabad Campus, Pakistan

Responsibilities: Teach undergraduate level courses and supervision of projects in Electrical Engineering courses

Quality Control Engineer (2006-07) — Daud Sons Armor Factory, Peshawar, Pakistan

Responsibilities

a. Perform day to day forging and CNC machining process to achieve production yield target and minimize reject.
b. Perform weekly continuous quality improvement process to identify root cause of defects and finding appropriate countermeasures
c. Develop and evaluate the feasibility of thread making process in gun barrels through vertical column operations.

COURSES TAUGHT (MSC & PHD LEVELS)

MEE 728	Advanced Fluid Mechanics	COMSATS University Islamabad, Wah Campus
MEE 715	Advanced Mechanical Vibrations	COMSATS University Islamabad, Wah Campus
MEE 705	Material Design and Material Processing	COMSATS University Islamabad, Wah Campus

COURSES TAUGHT (UNDERGRADUATE LEVELS)

MEE 110	Engineering Materials	COMSATS University Islamabad, Wah Campus

MEE 305	Mechanics of Machines I	COMSATS University Islamabad, Wah Campus
MEE 308	Mechanics of Machines II	COMSATS University Islamabad, Wah Campus
MEE 401	Mechanical Vibrations	COMSATS University Islamabad, Wah Campus
EEE 338	Power generation	COMSATS University Islamabad, Abbottabad Campus
EEE 113	Engineering Drawing and CAD tools	COMSATS University Islamabad, Abbottabad Campus
MDB 4022	Programmable Logic Controllers Lab	University Technology Petronas, Malaysia
MDB 3033	Mechanics of Machines	University Technology Petronas, Malaysia
EEE 203	Engg Mechanics and Thermodynamics	COMSATS University Islamabad, Abbottabad Campus

RESEARCH WORK (GRADUATE STUDENTS SUPERVISION)

No. of graduate students supervised: 4

1. Atif Sikander "Assessment of Drilled Hole Quality in Dry and Cryogenic Machining for Productivity Improvement", Mechanical Engineering, 2022, (Completed)-Main Supervisor
2. Hassan Raza Channar " Development and Characterization of Aluminum Metal Matrix Composites Using Al2O3 and SiC as Reinforcement Elements" ", Mechanical Engineering, 2022, (Completed)-Main Supervisor
3. Umair Rauf " Optimization of Turbo Pump Impeller Design through Simulation and Experimentation" , Mechanical Engineering, 2021, (Completed)-Co Supervisor
4. Muhammad Talha "Optimization and manufacturing for HPGP Rocket engines" Mechanical Engineering, 2024, (Completed)-Co Supervisor

BSc Engineering (Dissertation): Cumulative of 50 BSc. Engineering students supervised and graduated in Mechanical Engineering – Supervisor and Co-Supervisor

1. Design of experimental setup for measurement of left and drag forces of underwater vehicles.
2. Design and development trajectory tracking controller design for following saw tooth pattern in the presence of external disturbances (Ongoing)
3. Design and development of spiral control strategy of underwater glider (Completed, 2019)
4. Assessment of drilled-hole quality in dry and cryogenic machining for productivity improvement (Completed, 2022)
5. Design and development of autonomous surface vehicle (Completed, 2022)
6. Analysis of Mechanical Strength of Indium-Doped SAC 105 Lead-Free Solder Alloy (Completed, 2023)
7. Characterization of Aluminum Metal Matrix Composites reinforced with Al2O3 and SiC, Journal of Composites Science, (Completed, 2023)

8. Design and development of CNC plotter (Completed, 2012-13)
9. Design and development of spiral control strategy of underwater glider (Completed, 2014-16)
10. Modelling, Simulation and control of robotic hand (Completed, 2011-12)
11. Design of CNC plotter using PIC Microcontroller (Completed, 2010-11)
12. Design, Modelling and Simulation of Bottle line plant By Using PLC application (Completed, 2010-11)
13. Design and Installation of wind turbine using Hugh Piggot blade system application (Completed, 2008)
14. Design of Net-metering system
15. Sustainable development project on the design of bio gas plant
16. Design and development of coordinate measuring machine
17. Design and development of PLC bottle line plant
18. Design and development of prosthetic hand

RESEARCH GRANTS (Active Collaborations):	ERGS(RM)	PRGS(RM)	NESCOM	FRGS(RM)	DOST	Total amount
	150,000	150000	2000	50,000	39,000	289,000

DETAILS OF THE FUNDED PROJECTS

1. Co-PI: Project title: Development of Vehicle Control and Guidance System with 6 DoF Trajectory Simulation for Autonomous Underwater Vehicle (AUV)
   Grant: Exploratory research grant Scheme (ERGS), RM 150,000 (2014-2016) – Completed
2. Co-PI: Project title: Design and development of spiral control strategy of underwater glider
   Grant: Fundamental research grant Scheme (FRGS), RM 50,000 (2016-2017) – Completed
3. PI: Project title: Assessment of drilled-hole quality in dry and cryogenic. machining for productivity improvement
   Grant: Edith Cowan University, RM 5000 (2021-2023)-Completed
4. PI: Project title: Design and development of 3D CNC plotter Grant: Directorate of Science and Technology (DOST) KPK, Pakistan, RM 20,000 (2012-13) Completed
5. PI: Project title: Design of autonomous surface vehicle
   Grant: Ignite, RM 2000 (2021-2022)-Completed
6. Co-PI: Project title: Design and Installation of wind turbine using Hugh Piggot blade system.
   Grant: Engineers without borders UK, RM 10,000 (2007-08)-Completed
7. PI: Project title: Design, Modelling and Simulation of Bottle line plant By Using PLC application.
   Grant: DOST KPK, RM 2,000 (2010-11)-Completed

Patents: Barkat Ullah, Mark Ovinis, Syed Saad Azhar Ali; "Roll control mechanism for an underwater glider" 13 December 2019, UI 2019007468

PUBLICATIONS:

Journals:

1. Channar, H.R.; Ullah, B.; Naseem, M.S.; Akhter, J.; Mehmood, A.; Aamir, M. Mechanical Properties and Microstructural Investigation of AA2024-T6 Reinforced with Al2O3 and SiC Metal Matrix Composites. Eng 2024, 5, 3023-3032. https://doi.org/10.3390/eng5040157, Impact factor 0.437
2. Mehmood, A., Akhtar, K., Noor, S., Zahir, M.Z., Ullah, B., Khan, R., Salah, B. and Sajid Ullah, S., 2023. Experimental study to optimize cold working, aging temperature, and time on the properties of AA6061 tubes: analysis using design of experiment. Frontiers in Materials, 10, p.1199099. Impact factor 3.985
3. Muhammad Bilal, Mohsin Shahzad, Muhammad Arif, Barkat Ullah, Suhaila Badarol Hisham, Syed Saad Azhar Ali, Annual Cost and Loss Minimization in a Radial Distribution Network by Capacitor Allocation Using PSO, 22 November 2021, Applied Sciences, 2021, Impact factor 2.679
4. AKHTER, JAVED, Syed Ihtsham-ul-Haq Gilani, Hussain H. Al-Kayiem, Mubbashar Mehmood, Muzaffar Ali, Barkat Ullah, Mohammad Azad Alam, and Faisal Masood. "Experimental investigation of a medium temperature single-phase thermosyphon in an evacuated tube receiver coupled with compound parabolic concentrator." Frontiers in Energy Research;2021; 731. Impact factor 4.008
5. Shahzad, M.; Akram, W.; Arif, M.; Khan, U.; Ullah, B. Optimal Siting and Sizing of Distributed Generators by Strawberry Plant Propagation Algorithm. Energies 2021, 14, 1744. https://doi.org/10.3390/en14061744, Impact factor 3.004
6. B Ullah, M Ovinis, MB Baharom, SSA Ali, B Khan, MY Javaid; "Effect of waves and current on motion control of underwater gliders" Journal of Marine Science and Technology, 1-14, 2019, Impact factor 1.8
7. MY Javaid, M Ovinis, M Javaid, B Ullah; "Experimental study on hydrodynamic characteristics of underwater glider" ,NISCAIR-CSIR, India, 2019
8. B Ullah, M Ovinis, MB Baharom, SSA Ali, MY Javaid; "Pitch and depth control of underwater glider using LQR and LQG via kalman filter" International Journal of Vehicle Structures & Systems 10 (2), 137-141, 2018
9. MY Javaid, M Ovinis, FBM Hashim, A Maimun, YM Ahmed, B Ullah; "Pure heaving and pure pitching motion of an underwater glider" Advanced Science Letters, 23 (2), 1388-1392, 2017
10. MY Javaid, M Ovinis, N Thirumalaiswamy, FBM Hashim, B Ullah, "Numerical investigation on the hydrodynamic characteristics of an autonomous underwater glider with different wing layouts" ARPN Journal of Engineering and Applied Sciences, 2016
11. B Ullah, M Ovinis, MB Baharom, JD Setiawan, SSA Ali, MY Javaid, "Motion control strategy of an underwater glider in the presence of external disturbances" ARPN Journal of Engineering and Applied Sciences, 2016
12. MY Javaid, M Ovinis, FBM Hashim, A Maimun, YM Ahmed, B Ullah, "Effect of wing form on the hydrodynamic characteristics and dynamic stability of an underwater glider" International Journal of Naval Architecture and Ocean Engineering, 9 (4), 382-389, 2017, Impact factor 2.473
13. MY Javaid, M Ovinis, FBM Hashim, A Maimun, YM Ahmed, B Ullah; "Spiraling motion of an underwater glider: dynamic modeling" , ARPN Journal of Engineering and Applied Sciences, 2016
14. MY Javaid, M Ovinis, N Thirumalaiswamy, F Hashim, A Maimun, B Ullah, "Dynamic motion analysis of a newly developed autonomous underwater glider with rectangular and tapered wing" Indian journal of Geo marine science, 2016, Impact factor 0.496
15. MY Javaid, M Ovinis, FM Hashim, A Maimun, YM Ahmed, B Ullah; "Effect of water current on underwater glider velocity and range" Jurnal Teknologi, 78 (10-4), 2016, ISSN 0127-9696 / 2180-3722

16. MY Javaid, Mark Ovinis, B Ullah; “Study on Wing Aspect Ratio on the Performance of a Gliding Robotic Fish” Applied Mechanics & Materials 786, 2015

Conference(s):

17. Hameed, M. S., Wakeel, A., Pasha, R. A., Ullah, B., & Ali, U. Analysis of Mechanical Strength of Indium-Doped SAC 105 Lead-Free Solder Alloy. Engineering Proceedings, 45(1), 18, (2023).
18. Iftikhar Ahmad; Syed Asif Ali; Barkat Ullah;” Elements of an effective Repair Program for cavitation’s damages in Hydraulic Turbines” Information Technology Journal 6(8):1276-1281, ISSN 1812-563g, 2007
19. B Ullah, M Ovinis, MB Baharom, MY Javaid, SS Izhar; “Underwater gliders control strategies: A review” Asian Control Conference (ASCC), 10th Asian, 1-6, 2015

AWARDS AND DISTINCTIONS

	Year	Awarding Organization
Letter of appreciation	2020-2021	COMSATS Wah Campus
Partial support scholarship for PhD studies	2018-2019	Higher Education Commission, Pakistan
PhD scholarship	2014-2018	Graduate assistance (GA) by University Technology Petronas, Malaysia for PhD studies.
Faculty development program (FDP) Scholarship	2008-2009	COMSATS University Islamabad, Abbottabad
Merit Scholarship	2002-2006	BSc Mechanical Engineering, University of Engineering and Technology Peshawar, Pakistan.
Best poster award	2015	Kota Kinabalu Malaysia, ASCC 2015

CONTRIBUTION OF EXPERTISE:

Invited Speaker	1. Resource Person – Board of Studies on Outcome Based Education and SAR Completion, University of Engineering and Technology Mardan, Pakistan 16 February 2024 2. Resource Person-IMCOT Exhibition for invited speakers from Mechanical Engineering UET Peshawar.
Editorial and Reviewer	1. Reviewer - Journal of Engineering & Applied Sciences, 2022-23 2. Reviewer- ESTCON University Technology Petronas, Malaysia, 2017 3. Organizer -FIT Conference COMSATS University Islamabad, 2020
Thesis Examiner & Grant Evaluator	External examiner-MSc candidate, Experimental and numerical analysis of air jet in vertical water channel. 2. Internal examiner- MSc candidate, Muhammad Ihsan 2024 3. Internal Examiner-MSc candidate, Muhammad Umair 2021 4. External Examiner- MSc candidate, University of Engineering and Technology Taxila 2021
Current research projects:	Design of hull, wing profiles, added masses, and rudder of underwater glider.

PROFESSIONAL MEMBERSHIP/CERTIFICATES:

1. (Emerging Trends and Technologies: Carbon Capture & Storage, Climate Change & Net Zero, 21st August 2023
2. Online Teaching Level 1" online course (20-hours) offered by NAHE, HEC from 20 March 2021 to 10 April 2021.
3. Industrial Automation & Control: PLCs, SCADA and HMI, 3-days workshop, COMSATS IIT Abbottabad, Pakistan, 8-02-20-13
4. Industrial Automation & Control: Pneumatics & Hydraulic Systems, 3-days workshop, COMSATS IIT Abbottabad, Pakistan, 13-02-2012.
5. ANSYS workbench 3-days workshop, University Technology Petronas, 15-05-2018
6. MAPLE for mathematical modelling, one day workshop, University Technology Petronas, 10-03-2014
7. IMO's Obligations of Reducing Harmful Emission at Sea – Pakistan's Perspective and Challenges, Organized by Marine Environment Division from International Maritime Organization and National Institute of Maritime Affairs (NIMA) Pakistan, 31st January 2024.
8. International Workshop on Curriculum Development through Project based learning and CDIO, Islamabad, Organized by International Islamic University Islamabad, 10th January 2024.
9. One day workshop on Green Composite Materials (A Sustainable Alternative to Plastic for Green Future), COMSATS Islamabad, 14, December , 2023
10. 5th China-Pakistan Marine Information Workshop (CPMI-2023), Sanya, China, 7th to 11th December, 2023
11. Emerging Trends and Technologies: Carbon Capture & Storage, Climate Change & Net Zero, 21st August 2023
12. Online Teaching Level 1" online course (20-hours) offered by NAHE, HEC from 20 March 2021 to 10 April 2021.
13. Industrial Automation & Control: PLCs, SCADA and HMI,
14. 3-days workshop, COMSATS IIT Abbottabad, Pakistan, 8-02-20-13
15. Industrial Automation & Control: Pneumatics & Hydraulic Systems, 3-days workshop, COMSATS IIT Abbottabad, Pakistan, 13-02-2012.

REFERENCES

1. Dr. Atta Ur Rehman Shah, Chairman Department of Mechanical Engineering, COMSATS University Islamabad, Wah Campus, Wah Cantt Email: atta85@ciitwah.edu.pk Phone: +92 341 0111000
2. Dr Mohsin Shahzad, Associate Professor, Department of Electrical and Electronics Engineering, COMSATS University Islamabad, Abbottabad, Campus. Email: mohsinshahzad@cuiatd.edu.pk