

FAWWAD MASOOD

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Department of Civil Engineering,
NED University of Engineering &
Technology
Karachi, Pakistan 75270

Dedicated and passionate educator with 16 years of experience in teaching and research, looking to share my expertise and inspire students in Civil/Structural Engineering. With a strong passion for education and a proven track record of teaching excellence.

EDUCATION

PhD	NED University of Engineering & Technology, Civil Engineering Dissertation: “Behaviour of RC Beams Strengthened in Shear and Flexure Loading Regions using Textile Reinforced Mortar”	Jan 2021
ME	NED University of Engineering & Technology, Civil Engineering Major: Structural Engineering	Dec 2009
BE	NED University of Engineering & Technology, Civil Engineering Dissertation: “Strengthening of Reinforced Concrete Beams already tested to failure.”	Dec 2007

HONORS AND AWARDS

Trainer, Faculty Development Program, Sindh Higher Education Commission 2022
Conducted Training for University Teachers along with various Prominent University Professors of the Province. The topics delivered in the training were “Interactive Teaching” and “Formative Assessment Techniques”. The trainees included lecturers and assistant professors of all the prominent universities of province of Sindh having diversified backgrounds including doctors, engineers, lawyers, linguists, architects etc.

Best Final Year Design Project (Department of Civil Engg.) 2023
Project Title: “Experimental study of use of Ferrocement for construction of water tank”
Brief: The project is based on the idea of low-cost, easy to construct above ground water tanks, minimizing the structural weight, material consumption and steel usage, through incorporation of ferrocement as a substitute of conventional reinforced concrete by assembling pre-cast units made of ferrocement.
The idea of fiber reinforced ferrocement tank through assembling of precast elements was conceived keeping in eye the ease of construction of water tank in areas where construction of tank was not easy, or immediate utility of tank was required. Moreover, the structural weight of the tank was to be reduced along with reduction of usage of steel to encourage sustainable construction and thus lower per tank carbon emissions

NED University of Engineering & Technology, Karachi
Assistant Professor, Department of Civil Engineering

May 2013 to Date

- **FRP Reinforced Concrete**, a graduate level course averaging 20 students per semester, covering the following topics: Basic equations of elasticity; virtual work; stiffness; properties of structural elements; variational and weighted Overview of FRP reinforcement; constituent materials for FRP; properties of FRP composites; design issues such as cover delamination, FRP debonding; design basis for FRP reinforcement and strengthening; flexure and shear design; serviceability design of FRP RC beams; FRP reinforcement detailing; flexure strengthening of beams and slabs; shear strengthening of RC members; FRP confining for columns; fire resistance and endurance of FRP reinforced structures (Student Rating: Excellent)
- **Reinforced Concrete Design - I**, an undergraduate course averaging 200 students per semester, covering the following topics: Introduction - Course Outline, History, Codes and Review of structural methods, Properties of Reinforced Concrete, Axially Loaded Columns, Serviceability Criteria & Design, Deflection control in beams, Crack width control in beams, Shear in RC Beams, Footings - Isolated Footings (Student Rating: Excellent)
- **Reinforced Concrete Design – II**, shared part of an undergraduate course averaging 200 students per semester, covering the following topics: Principles of Prestressing, Properties of high strength materials used in prestressing, comparison of Prestressed concrete with Conventional Reinforced Concrete, Post Tensioning and Pretension Techniques, Prestress losses, immediate and time dependent losses, detailed estimation of losses, analysis and design of simply supported prestress beams in flexure and shear. (Student Rating: Very Good)
- **Structural Analysis - I**, an undergraduate course averaging 200 students per semester, covering the following topics: Introduction and review of prerequisites, Determinacy, Degree of Freedom, Idealization of Structures, SFD and BMD of complicated Beams and simple Frames, Elastic Curves, Conjugate Beam Method, Moment Area Method for beams and frames, Energy Methods, Catchment Area Method, Tributary area method, Loads and their types. (Student Rating: Excellent)
- **Structural Analysis - II**, an undergraduate course averaging 200 students per semester, covering the following topics: Introduction and review of prerequisites, Determinacy, Moment Distribution Method for beams and frames, Slope Deflection Method for Beams and Frames. Stiffness Matrix Method, Finite Element Method, Consistent Deformation Method (Student Rating: Excellent)
- **Statics and Dynamics**, an undergraduate course averaging 200 students per semester covering the following topics: Unit Systems including SI Units and US Customary Systems, Forces and Vectors, Addition of Vectors, Vector Algebra, Equilibrium of Particles, Equilibrium of Rigid Bodies, Analysis of Trusses, Internal forces of Flexural Members, Centroids and Moment of inertia of Composite Sections, Introduction to Engineering Mechanics-Dynamics (Student Rating: Excellent)
- **Mechanics of Solids-I** an undergraduate course averaging 200 students per semester covering the following topics: Stresses and their types including axial, shear flexural stresses, strains, Poisson's Ratio, Modulus of Elasticity and Rigidity, Slope and

Deflections using Double Integration Method, Bi-axial Stresses, Bending Theory, Torsional Theory (Student Rating: Very Good-Excellent)

- **Structure for Architects I and II** a series of undergraduate courses averaging 50 students per semester covering the following topics: Stress, strain, Moduli of elasticity and rigidity, Allowable and ultimate loads, Factor of Safety, bending and direct stress, properties of materials, shear force and bending moment diagrams, loads and its implications, analysis of simple structures, structural response, design of RCC structures, prestressing, soil and foundation, Structural Drawings and Detailing, Roof Floor framing system, lateral load resisting systems (Student Rating: Excellent)

NED University of Engineering & Technology, Karachi

Jan 2008 to May 2013

Lecturer, Department of Civil Engineering

- Same undergrad courses as taught as Assistant Professor

Undergrad Final Year Projects Students Advised

Supervised/Co-Supervised 40+ Research based Final Year Design Projects (FYDPs). A few of the recent FYDPs are listed below:

- “Comparative Study of Glass Fiber Reinforced Polymer and Steel Reinforcement in Building Components”, August 2024
- “Experimental Study of Usage of Bamboo as Reinforcement in Concrete Beams”, August 2024
- “Strengthening of Concrete Beams Using Aluminum Sheets in Flexure”, August 2024
- “Experimental Investigation of Circular Columns Logitudinally and Spirally Reinforced with GFRP Bars Subjected to Concentric and Eccentric Loading”, August 2024
- “Experimental study of the use of Ferrocement for construction of water tank”, August 2023 (Best FYDP of the Year)
- “Experimental study Strengthening of Reinforced Concrete Beams Using Ferrocement”, August 2023

RESEARCH INTERESTS

Aiming to address the pressing challenges in Structural Engineering, my research interests concentrate on (but not limited to): Fiber Reinforced Polymers (FRPs) as internal reinforcement, FRP as a strengthening Material, Fiber Reinforced Cementitious Mortar (FRCM) as an external strengthening material, use of various indigenous materials for structural strengthening, use of fiber reinforced ferrocement as a replacement of conventional reinforcement in various structural elements, use of naturally existing materials as a reinforcing material, Finite Element modelling of strengthened structural members, Have performed various small scale to full scale studies as part of own PhD research, and various dissertation work as supervisor.

PUBLICATIONS

Journal Publication

Masood, F. and Rehman, A., *Behaviour of Full-Scale Reinforced Concrete Beams Strengthened with Textile Reinforced Mortar (TRM)*. 2019: p. 65-82.

Conference Papers

(Peer-Reviewed)

1. Masood, F., S. Mubeen, and U. Gazder, *Modelling of full scale reinforced beams strengthened with TRM*. 2022.
2. Khan, A. and F. Masood. *Strengthening of shear deficient reinforced concrete beams with textile reinforced mortar (TRM)*. in *Proceedings of 8th international conference on fibre-reinforced (FRP) composites in civil engineering, Hong Kong, China*. 2016.
3. Khan, A. and F. Masood. *Behaviour of Reinforced Concrete Beams Strengthened with Textile Reinforced Mortar (TRM)*. in *Proceedings of Conference: fib Symposium 2016, Cape Town, South Africa*. 2016. Cape Town, South Africa.
4. Khan, A.-u.-R. and F. Masood, *Load-deflection curve prediction of RC beams strengthened by externally bonded CFRP wraps and strips*, in *Construction Materials and Structures*. 2014, IOS Press. p. 1015-1021.
5. Farooqui, R.U., F. Masood, and F. Saleem. *Key causes of construction disputes in Pakistan*. in *Third International Conference on Construction in Developing Countries (ICCDC-III) "Advancing Civil, Architectural and Construction Engineering & Management*. 2012.
6. Khan, R.A., G. Uneb, and M. Fawwad. *Monetary effects of building regulations—A case study of Karachi building construction*. in *Proc., 2nd Int. Conf. on Construction in Developing Countries (ICCIDC-II). 'Advantages and Integrating Construction Education, Research & Practice*. 2010.

PRESENTATIONS AND INVITED LECTURES

Session Moderator, Technology Enabled Civil Infrastructure Engineering & Management Conference, 15th & 16th December 2023.

Master of Ceremony/Session Moderator, 13th International Civil Engineering Congress, 10th & 11th November 2023.

Training Sessions, "Title of Presentation," Name of Workshop, 10th & 11th November 2023.

Invited Lecture, "Structural Systems made Easy for Architects," Dawood University of Engineering and Technology, 7th September 2022

External Examiner, Materials and Construction, Final Year Architecture Dawood University of Engineering and Technology, 11th April 2022

Trainer, Faculty Development Program, Sindh Higher Education Commission 2022
Hosted at, NED University of Engineering & Technology
Training session titles, “Interactive Teaching Methods” and “Formative Assessment Techniques”

PROFESSIONAL TRAINING

Outcome Based Education System

NED University of Engineering & Technology, Karachi, 2014, 2018, 2022
Various trainings related to outcome based education system

Graduate Teaching Course, Department of Civil Engineering, NED University of Engineering & Technology, Duration 3 Months
Conducted by Dr. Syed Salman Mobeen (Trained through Harvard University’s Graduate Teaching Course)
The detailed course included detailed teaching techniques, case studies related to unexpected/challenging cases for teachers, grading and assessment techniques, outcome based education system.

PROFESSIONAL AFFILIATIONS

Pakistan Engineering Council, 2008-Present, Professional Engineer

Institute of Engineers Pakistan, 2016-Present

PROFESSIONAL SERVICE

Member Organizing Committee

International Civil Engineering Congress, NED University, 2021 to date

Member Technical Committee/Reviewer

International Civil Engineering Congress, NED University, 2021 to date

Member Technical Committee/Reviewer

Technology Enabled Civil Infrastructure Engineering & Management Conference, 15th & 16th December 2023.

Pakistan Standards & Quality Control Authority

Member of Committee for revision of PSQCA Standard Specification for Clay Roof Tiles standard, **PS 4898-2008** and Standard Specification of Sewer and manhole Brick made from Clay or Shale **PS 4895-2008** as an expert representing NED University of Engineering & Technology, 22nd August 29, 2024

Students Class Advisor/Student Counsellor

NED University, 2011-2013, 2021 to date

Focal Person for Video Conferencing Facility - Higher Education Commission

NED University, 2013 to date

Editor, NEDian Campus E-Newspaper
https://uafa.neduet.edu.pk/NEDian_News.html
NED University, 2021 to date

ADDITIONAL RESPONSIBILITIES

Member Curriculum Review Committee for Structural Engineering Courses
Department of Civil Engineering NED University, 2019 to present

Lab In-charge, Engineering Mechanics Lab
NED University, 2009 to present

Team Member of Departmental Team for Pakistan Engineering Council's Visit for Accreditation
NED University, 2008 to Present

Team Member of Outcome Based Education System's Departmental Team
NED University, 2018 to Present

Focal Person for Affective Domain Assessment of Outcome Based Education System's Departmental Team
NED University, 2021 to Present

Site Visits Coordinator
NED University, 2019 to 2023

Internship Coordinator
NED University, 2021 to 2023

Masters Admission Committee for Civil Engineering Graduates
NED University, 2021 to present
Responsibilities include, development of entry test questions, grading of analytical writing and compilation of results along with the Department's head and Post Graduate Coordinator

Alumni Coordinator for Civil Engineering Graduates
NED University, 2021 to present

Social Media Coordinator for Department of Civil Engineering
NED University, 2021 to present

Organizing Committee Member for all the events at Department of Civil Engineering
Have been a key member of organizing committees of all the seminars, symposium, guest lectures and various events held at Department of Civil Engineering, NED University

COMMUNITY SERVICE

NED University of Engineering & Technology

Class Advisor/Student Counselling and Financial Support, Karachi, April 21 to Date

NED University of Engineering & Technology

Class Advisor/Student Counselling and Financial Support, Karachi, Jan 11 to Dec 13

LANGUAGES

Urdu: Native Language

English: Advanced Listener, Advanced Speaker, Advanced Reading and Writing