Proposed List of Projects for Batch 2022

STRUCTURAL ENGG. (15)

Dr. Abdul Jabbar Sangi

1) Comprehensive study of GFRP bar bond behaviour using beam end test.
2) Evaluating Durability properties of GFRP bars under extreme environmental condition

Dr. Shamsoon Fareed

1) Influences of nano-particles on dynamic strength of ultra-high performance concrete.
2) Effects of different nanomaterials on hardening and performance of ultra-high strength concrete (UHSC).
3) Estimation of parameters for constitutive modelling of high and ultra-high strength concrete using artificial neural networks.
4) Residual compressive strength prediction of concrete exposed to elevated temperatures using artificial neural networks.
5) Residual strength prediction of RC structural elements exposed to post blast fire using artificial neural networks.
6) Numerical & Experimental study on the behaviour of TRM Strengthened Reinforced Concrete Beams in Flexure.

Proposed List of Projects for Batch 2022

STRUCTURAL ENGG (15)

Dr. Shamsoon Fareed

7) Numerical & Experimental study on the behaviour of TRM Strengthened Reinforced Concrete Beams in Shear.
8) Numerical & Experimental study on the behaviour of TRM Strengthened Reinforced Concrete Columns.
9) Testing of developed fabrics and adhesives in concrete strengthening applications.
10) Numerical Investigation on behaviour of RC Beams under Impact Loading.

Dr. Syed Salman Mobeen

1) Sustainable Waterproofing Alternatives: Replacing Membranes with Admixtures.

Dr. Aslam Faqeer Muhammad

1) Integrated Structural Design and Cost Evaluation of Building for Seismic Design Categories (SDC-A to D) using Tekla Structures and Revit.

Dr. Fawwad Masood

1) Evaluation of Early and Ultimate Compressive Strengths in REMICRETE® PCSP Modified Concrete.

Proposed List of Projects for Batch 2022

CONSTRUCTION ENGG & MANAGEMENT (7)

Dr. Rana RabNawaz Ahmed

1) Evaluating Material Recovery Potential using various Deconstruction Strategies: A Case study from local Construction sector.
2) BIM-based Proactive Delay Detection and Mitigation in Construction Projects.
3) Managing construction Logistics along the BRT project in Karachi.
4) Reducing Carbon Footprint across the supply chain of an Infrastructure Project.
5) Preventive maintenance in buildings: A BIM based Facility Management Model.

Engr. Farhan Saleem

1) Application of BIM in Construction Safety and Risk Management.
2) Application of Digital Twin Technology in the Construction Industry.

Proposed List of Projects for Batch 2022

GEOTECHNICAL ENGINEERING (27)

Dr. Amanullah Marri

1) Static and Dynamic Triaxial Testing of Silty Sand for Liquefaction Susceptibility Assessment.
2) Effect of Moisture Content on Shear Strength of Compacted Clay using Static Triaxial Tests.
3) Dynamic Modulus and Damping Ratio of Sand-Clay Mixtures using Resonant Column Tests.
4) Thermal Conductivity Variation of Compacted Soils under Different Moisture and Density Conditions.
5) Correlation between Electrical Conductivity and Permeability of Saturated Sandy Soils.
6) Effect of Gradation on the CBR Value of Granular Base Materials.
7) Influence of Temperature Cycles on Soil Strength and Stiffness.
8) Comparative Study of Proctor Compaction Methods on Cohesive Soil Strength.
9) Effect of Salinity on Electrical Conductivity and Shear Strength of Fine-Grained Soils.
10) Laboratory Simulation of Seismic Loading on Saturated Sandy Soils using Dynamic Triaxial Tests.

Proposed List of Projects for Batch 2022

GEOTECHNICAL ENGINEERING (27)

Dr. Amanullah Marri

11) Finite Element Modelling of Slope Stability under Seismic Loading using Plaxis 2D.
12) Numerical Simulation of Pile Foundations in Soft Clay under Lateral Loading.
13) Modelling of Retaining Wall Behaviour under Static and Dynamic Loading.
14) Effect of Groundwater Table Fluctuations on Stability of Embankments.
15) Plaxis Modelling of Tunnel Excavation in Layered Soils.
16) Numerical Analysis of Raft Foundation Performance on Sand-Clay Layers.
17) Simulation of Soil-Structure Interaction for Shallow Foundations.
18) Prediction of Liquefaction Potential using Coupled Flow-Deformation Analysis in Plaxis.
19) Dynamic Properties of Sandy Soil from Resonant Column Test and Validation through Plaxis Modelling.
20) Laboratory-Determined Shear Strength Parameters for Use in Numerical Slope Stability Analysis.
21) Thermal Conductivity Testing of Soil and Numerical Simulation for Underground Power Cable Bedding.
22) Electrical Conductivity Measurements and Modelling of Unsaturated Soil Behaviour.

Proposed List of Projects for Batch 2022

GEOTECHNICAL ENGINEERING (27)

Dr. Amanullah Marri

23) CBR Testing of Stabilised Soil and Modelling of Pavement Layers in Plaxis.
24) Permeability Testing of Compacted Soils and Validation through Seepage Analysis in GeoStudio.
25) Combined Experimental and Numerical Investigation of Soil Behaviour under Cyclic Loading.

Dr. Syeda Saria Bukhari

1) When the Earth Turns to Liquid: Karachi's Hidden Seismic Risk.

Dr. Sadia Moin

1) Comparative Evaluation of the Effects of Potable and Contaminated Water on the Mechanical Properties of Compacted Soil.

Proposed List of Projects for Batch 2022

WATER RESOURCES ENGG (8)

Dr. Haider Hasan

1) Impact of sea level rise on Tsunami risk and hazard along major coastal cities of the Arabia sea.
2) Modelling ship movement in harbours due to tsunami.
3) Modelling storm surge along the coast of Karachi.

Engr. Haris Akram Bhatti

1) Assessing Satellite based rainfall estimates for watershed modeling.
2) Development of Intensity Duration Frequency Curves using remote sensing techniques.
3) Hydraulic Design of Small Dams.
4) Feasibility study of large storage infrastructures for solving Pakistan Water Issues.
5) Development of a web-based tool to authenticate rain gauge and satellite data for better accuracy and water management.

Proposed List of Projects for Batch 202

TRANSPORTATION & INFRASTRUCTURE ENGG (8)

Dr. Sajjad Ali

1) Geospatial Analysis for Railway Accident Prevention: Identification and Characterization of Black Spots in Rail Network
2) Small Port Location Optimization: A Multi-Criteria Evaluation for Maritime Infrastructure Development.
3) Traffic Operations Assessment and Signalization Needs Analysis for a Congested Urban Roundabout
4) Pavement Asset Management for Urban Arterial Roads: Condition Assessment and Maintenance Prioritization
5) Assessment of a Newly Selected Airport Site and Its Air Quality Implications.

Engr. Syed Muhammad Noman

1) Mode choice analysis for proposed Karachi Circular Railways (KCR) infrastructure project
2) Public transportation routes rationalization and future direction
3) Framework development for railways infrastructure rehabilitation and maintenance

Proposed List of Projects for Batch 2022

ENVIRONMENTAL ENGG (8)

Dr. Mehmood Ali

1) Effects of microplastics on soil physical, chemical and biological properties.
2) Performance Evaluation of Biomass-Based Water Heating System Using Agricultural Residues.
3) Impact and mitigation measures of untreated wastewater discharge on fauna and vegetation in a mangrove ecosystem.

Dr. Sadia Khan

1) Microplastics induced disinfectant resistance and biofilm formation in water treatment.
2) Plant-based bio-waste for the removal of edible oil from wastewater.

Dr. Abdul Ghaffar

1) Water quality monitoring in real-time applying sensors, IoT and Satellite.
2) Smart GHG: Customised Emissions Calculator with Real-Time Environmental Dashboard.
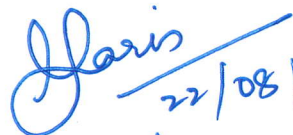3) Design and Performance Evaluation of a Solar-Thermal Distillation System for Seawater Desalination.

Proposed List of Projects for Batch 2022

PROJECTS OFFERED FROM INDUSTRY (5)

1) Development of Self-Healing Concrete Using Crystalline Waterproofing Technology.
2) Crystalline Admixture-Based Waterproofing for Mass Concrete Applications in Coastal Areas.
3) Freeze-Thaw Resistance and Durability Enhancement of Concrete. with REMICRETE® PCSP.
4) Smart Waterproofing System: Combining Crystalline Concrete (BETOCRETE® C-16) with AQUAFIN-CJ6.
5) Design and Experimental Validation of a Type-B Waterproofing System Using AQUAFIN-CJ6.

Approved for display —

Haris / 22/08/2025

Haris Akram Bhatti

FyDP Coordinator