

### Shallow and Deep Foundations – Short Course Program

| Day 1         | Thursday April 18, 2024  |
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| 08:00 – 08:30 | <b>Welcome and Course Introduction</b>   |
| 08:30 – 10:00 | <b>Review of soil mechanics and site investigation</b><br>Basic soil mechanics concepts used in foundation design, shear strength, subsurface exploration, geophysical approaches, geotechnical drilling, sampling and field tests |
| 10:00 – 10:30 | <b>Break and Discussion</b>  |
| 10:30 – 12:00 | <b>Shallow foundations – bearing capacity</b><br>Shallow vs deep foundations, bearing capacity analysis, limit state design, LRFD design   |
| 12:00 – 13:00 | <b>Lunch</b>   |
| 13:00 – 14:30 | <b>Shallow foundations – settlement</b><br>Immediate vs long-term settlement, methods to estimate immediate settlement, elastic modulus of soil, stress increase in soil, estimating consolidation settlement                      |
| 14:30 – 15:00 | <b>Break and Discussion</b>  |
| 15:00 – 16:30 | <b>Design of shallow foundations</b><br>Design considerations for shallow foundations, raft (mat) foundations  |
| Day 2         | Friday April 19, 2024  |
| 08:30 – 10:00 | <b>Deep foundations</b><br>Types of deep (pile) foundations, selecting appropriate foundation system for a specific site, load transfer of pile foundations, pile setup, pile-load tests   |
| 10:00 – 10:30 | <b>Break and Discussion</b>  |
| 10:30 – 12:00 | <b>Pile foundations under axial loads – Load transfer</b><br>Bearing capacity of single pile and pile groups under axial loads, pull out capacity  |
| 12:00 – 13:00 | <b>Lunch</b>   |
| 13:00 – 14:30 | <b>Pile foundations settlement</b><br>Estimating settlement of single pile and pile groups under axial loads, design procedures for piles, Down drag, Foundations in expansive soils   |
| 14:30 – 15:00 | <b>Break and Discussion</b>  |
| 15:00 – 16:30 | <b>Lateral capacity and deflection of pile foundations, Design considerations</b><br>Lateral capacity and deflection analysis of single pile and pile groups under lateral loads, p-y curves, LPILE model                          |
| 16:30 – 17:00 | <b>Adjournment</b>   |