## Course 1 - The Chemistry of Portland Cement

### Day 1 (Monday July 11)
- **Processing**
  - 12:30 – 1:00 PM: Documentation
  - 1:00-1:50: Portland cement and sustainability
  - 2:00-2:50: Fabrication of Portland Cement
  - 2:50-3:10: Coffee Break
  - 3:10-4:00: Process Innovations and Grinding Additives

### Day 2 (Tuesday July 12)
- **High temperature reactions**
  - 10:00-10:50 AM: Burnability
  - 11:00-11:50 AM: High Temperature Reactions
  - 11:50 AM-1:00 PM: Lunch
  - 1:00-1:50 PM: Crystallography of clinker phases
  - 2:00-2:50 PM: Fluxes and Mineralizers
  - 2:50-3:10PM: Coffee Break
  - 3:10-4:00 PM: Cement Standards

### Day 3 (Wednesday July 13)
- **Hydration**
  - 10:00-10:50 AM: Hydration of Portland Cement I
  - 11:00-11:50 AM: Hydration of Portland Cement II
  - 11:50 AM-1:00 PM: Lunch
  - 1:00-1:50 PM: Structural Models for C-S-H
  - 2:00-2:50 PM: Synthesis of C-S-H
  - 2:50-3:10 PM: Coffee Break
  - 3:10-4:00 PM: Blended Cements

### Day 4 (Thursday July 14)
- **Characterization and practices**
  - 10:00-10:50 AM: Characterization of anhydrous cements I
  - 11:00-11:50 AM: Characterization of anhydrous cements II
  - 11:50 AM-1:00 PM: Lunch
  - 1:00-1:50 PM: Characterization of Hydrated Cements I
  - 2:00-2:50 PM: Characterization of Hydrated Cements II
  - 2:50-3:10 PM: Coffee Break
  - 3:10-6:00 PM: Practices

### Day 5 (Friday July 15)
- **Fresh paste and Durability**
  - 9:00-9:50 AM: Properties of Fresh Paste: Rheology
  - 10:00-10:50 AM: Additives
  - 11:00 AM-11:50 PM: Alkali-Silica Reaction
  - 11:50-1:00 PM: Lunch
  - 1:00 – 1:50 PM: Sulfate Attack
  - 2:00 – 2:50 PM: Carbonation

Current price $1,100 US (chemistry of Portland cement) week 1 includes presentation slides