

### Advanced Liquid Measurement

2.5 Days

- **Volume vs. Mass Systems**
  - Fundamental elements controlling overall accuracy from the perspective of imbalance inquiries
  - Understanding relationships controlling system performance
- **Volume Systems**
  - Influences and faults in temperature and pressure measurements and impact on system balance
  - Understanding volume correction factors
- **Mass Systems**
  - Volume and density in inferred mass systems
  - Mass and density in direct mass systems
  - Volume vs. mass proving
  - Density correlation proving
  - Limitations of API 11.2.4 (GPA TP-27)
- **Sampling Systems**
  - Role of sampling in volume systems
  - Role of sampling in mass system
  - Discerning the source of gravity error (densitometry vs. analysis)
- **Case Studies**
  - Volume Systems
    - » Imbalances in fixed gravity systems
    - » Gathering system losses
    - » Financial loss absent measurement error
  - Mass Systems
    - » Investigative techniques
    - » System that gained but lost
- **Exercise**

Students are given a factual case of measurement imbalance with supporting data and are challenged to produce an investigative analysis and a systematic recommendation to resolve the imbalance and then to present their findings.