- Deadweight analysis
- Seismic input and analysis
- Waterhammer causes, analysis, and prevention
- Flow-induced vibration causes, analysis, and prevention
- Pipe break principles, locations and effects
- Leak-before-break overview
- Tornado loading on outdoor piping
- Buried pipe, key design equations

5. EVALUATION OF WALL THINNING CASE STUDIES
   - ASME XI CC N-513 and N-597 technical basis
   - Case Study – cavitation in piping
   - Case Study – wall thinning N-597
   - Challenges in crack assessment
6. EVALUATION OF CRACK-LIKE FLAWS
   - Introduction to fracture mechanics
   - ASME XI Ap.H Simple Case
   - Real-Life Challenges
7. OPERABILITY ASSESSMENT
   - ASME Code and NRC perspectives
   - Over-pressure transient
   - Abnormal vibration in piping
   - Locked snubber thermal overstress
   - Beyond-design thermal transient
8. REPAIRS OF PIPING SYSTEMS CASE STUDIES
   - ASME XI and PCC-2 repair options
   - Welded repairs
   - Mechanical repairs
   - Non-metallic repairs

Instructor:

George Antaki, PE, Fellow ASME,is chairman of ASME III Working Group Piping Design, chairman of ASME B31 Mechanical Design Committee, and member of ASME O&M Subgroup Piping. He started his career at Westinghouse in 1975 and has been involved in the design, analysis, qualification, start-up, and operational trouble-shooting of mechanical equipment throughout the industry. He is the author of three textbooks on the subject of mechanical integrity and fitness-for-service, and is an instructor for ASME.