Course Overview
SwRI’s 4-day training course covers the key topics to consider when designing turbomachinery. The course details the design process starting from cycle analysis and progressing to machine modeling and detailed component design. This class is intended for engineers and designers who already have some turbomachinery experience. Instruction will be provided by experienced SwRI Machinery Department staff with firsthand experience designing turbomachinery. This class is unique due to the comprehensive content for turbomachinery design and the detailed design methods presented.

Cost
The short course cost is $199 USD per registrant. Registration includes 4-day course instruction, training materials, and class exercises.

Day 1—Thermodynamics and Cycles
- Basic thermodynamics of heat engines and power cycles including PV diagrams, TS diagrams, Carnot Cycle, Brayton Cycle
- Cycle Analysis and Optimization
- NPSS
- Component overview:
  - Compressors and Expanders
  - Basics of combustors and sizing

Day 2—Aerothermal Design of Compressors and Expanders
- Overview of the design process
- Radial and axial machines (specific speeds, non-dimensional performance parameters)
- 1-D design process
- CFD analysis
- Case study of expander design
- Case study of compressor design
- Performance testing and instrumentation

Day 3—Rotordynamics, Blade Dynamics, and Casing Integration
- Rotordynamic Analysis
- Blade Dynamic Analysis

Day 4—Machine Integration and Design Exercise
- Casing Integration (including case design, bearing/seal placement, balance pistons)
- Conceptual and Detailed Design
- Design exercise of centrifugal compressor
- Pressure containment
- Typical materials used

For more information, please contact:
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