Course Overview
SwRI’s introductory two-day short course covers lateral and torsional rotordynamics, blade dynamics, vibration measurement, and balancing concepts, for engineers, operators, and technicians working on rotating machinery in the oil and gas and power generation industries. Instruction will be provided by experienced SwRI Machinery Program staff and will include fundamental principles, practical hands-on exercises, case studies, and machinery demonstrations.

Cost
The short course cost is $750 USD per registrant. Registration includes two days of course instruction, training materials, class exercises, and two lunches.

Course Topics
Lateral Rotordynamics
• Mass elastic model development
• Bearing performance
• Undamped critical speeds
• Lateral mode shapes
• Damped imbalance response
• Aerodynamic cross coupling
• Stability analysis
• Case studies

Torsional Rotordynamics
• Mass elastic model development
• Steady state critical speeds
• Torsional mode shapes
• Typical failure modes and modifications
• Forced response analysis
• Transient torsional analysis
• Torsional field testing

Hands-On Exercises
• Rotor vibration measurement
• Rotor balancing

Turbomachinery Blade Dynamics

Centrifugal Compressor Installation Visit and Instrumentation Overview

Field Vibration Measurements

For more information, please contact:
Justin R. Hollingsworth
(210) 522-2537
justin.hollingsworth@swri.org
TIMOTHY C. ALLISON, Ph.D. Manager, R&D
Rotating Machinery Dynamics Section
Machinery Program

Fluids and Machinery Engineering Department
Mechanical Engineering Division

Dr. Timothy Allison has successfully managed numerous projects, research programs involving reciprocating compressor valves and bolted joints in high vibration environments, and a study and comparison of existing and proposed gas turbine starter options. He has participated in the development and testing of new turbomachinery technologies, including internally cooling diaphragms for CO2 compression, a downhole processing and compression tool, gas foil bearings, and reciprocating compressor valves.

JASON WILKES, Ph.D. Sr. Research Engineer
Rotating Machinery Dynamics Section
Machinery Program

Fluids and Machinery Engineering Department
Mechanical Engineering Division

Dr. Jason Wilkes has been responsible for designing and executing experiments to test the performance and mechanical integrity of multiple high-speed turbomachines. His part in designing the experiments has varied from constructing open- and closed-loop test facilities, instrumentation selection and calibration, programming test software in LabView, component selection and design, rotordynamic analysis and design, and finite-element analysis.

J. JEFFREY MOORE, Ph.D. Institute Engineer
Machinery Program

Fluids and Machinery Engineering Department
Mechanical Engineering Division

Dr. Jeffrey Moore’s experience includes engineering and management responsibilities in rotordynamics, aerodynamics, blade vibration, and mechanical design of centrifugal compressors and gas turbines at Solar Turbines Inc. and Dresser-Rand. Dr. Moore is the Associate Editor for the Journal of Tribology, a member of the IGTI SCO Committee, the Turbomachinery Symposium Advisory Committee, the IFToMM International Rotordynamics Conference Committee, and the API 616 and 684 Task Forces.

JUSTIN R. HOLLINGSWORTH Principal Engineer
Rotating Machinery Dynamics Section
Machinery Program

Fluids and Machinery Engineering Department
Mechanical Engineering Division

Mr. Justin Hollingsworth’s rotordynamic experience spans more than 20 years, with an emphasis on lateral, steady-state and forced response torsional, transient torsional, stability, and bearing/seat studies. He has conducted field measurements and associated analyses for a wide variety of machinery, including centrifugal and reciprocating compressors, gearboxes, turbines, pumps, generators, engines, industrial cooling fans, and electric motors. He has also contributed to related industry standards and guidelines.

NATHAN POERNER Research Engineer
Fluid Machinery Systems
Machinery Program

Fluids and Machinery Engineering Department
Mechanical Engineering Division

Mr. Nathan Poerner performs analytical reviews in conjunction with field analysis to solve vibration and pulsation problems in fluid-handling machinery and associated piping systems and system modeling for dynamic pulsation control and analyzes failure modes of machinery and piping components caused by acoustic-induced vibration. He supports the development and maintenance of the field service group’s testing software and aids with the research and development of advanced compressor pulsation control methods.