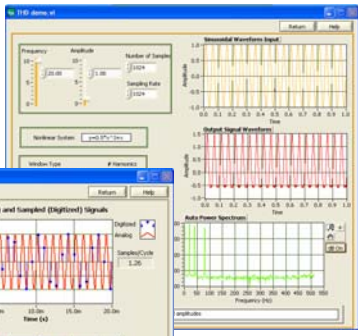
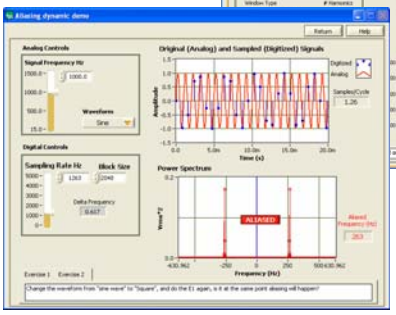
Engineering Mechanics Software

Spectra Quest Engineering Mechanics Software is for learning principles of engineering mechanics and performing simulation, analysis, and design. Computer simulations and animations visualize theories and expedite learning. The software series also provides tool for engineers to perform dynamic analysis and calculation for design parameter estimations.

Signal Processing and Simulation



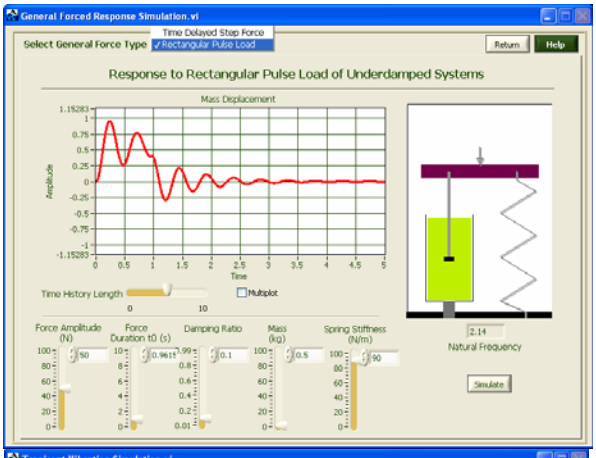


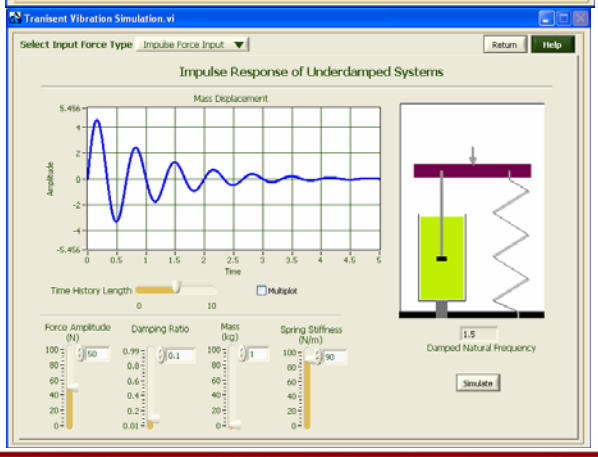
Signal Processing and Simulation is comprehensive and powerful software for expediting digital signal processing learning. It provides full theoretical structure and visually simulates most common but hard to understand signal processing concepts.

- Comprehensive - 17 topics from signal definition to full digital signal analysis
- Expedite learning - theory plus visual simulations
- Clarify concepts - learn with exercises for each topic
- Verify analysis - signal generation provides tools to verify the diagnosis
- Advanced features - averaging, windowing, zero-padding and more

Vibration Fundamentals

Vibration Fundamental is designed to teach basic concepts of vibration using an interactive and visual simulations. Each concept is explained theoretically and simulated to expedite learning.





- Basic concepts simulated in user controlled input parameters
- Full mathematical details
- Simple harmonic motion and mass-spring system
- Free vibration, damped vibration, and forced vibration
- Undamped, underdamped and overdamped systems
- Logarithmic decrement
- Transient response – step input and impulse input
- Combined vibration -- harmonic excitation with initial displacement and velocity
- General forced response--delayed step input and rectangular pulse input
- Displacement transmissibility and force transmissibility
- Frequency response function

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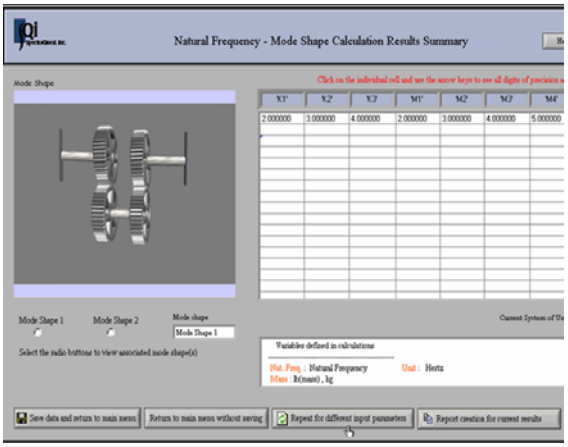
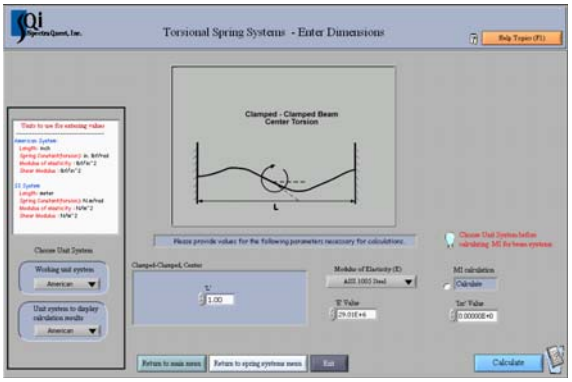
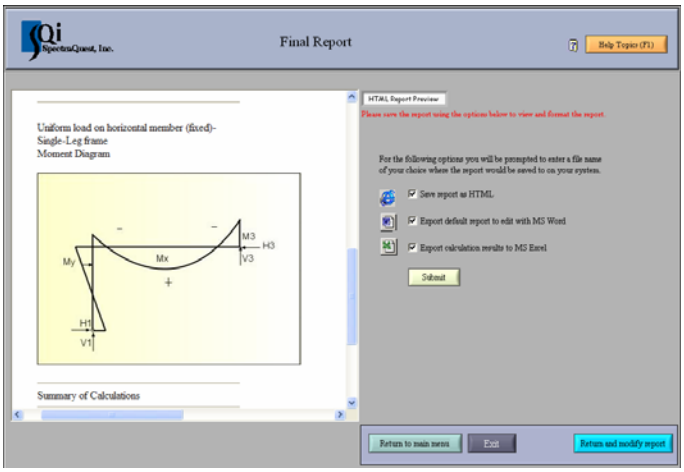
Structural Dynamics Calculations I & II

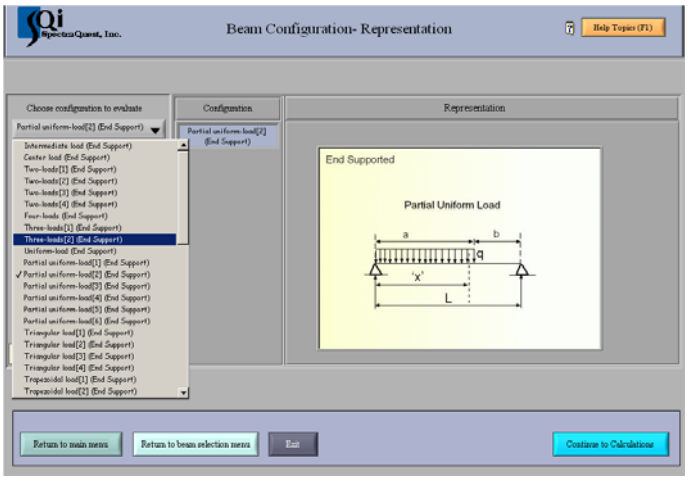
Structural Dynamics Calculations is software for calculation and animation of vibration properties to optimize design. The properties of more than forty engineering structures, including plane area section, solid bodies, spring systems, natural frequency, and mode shape, are calculated and simulated. Package I is for flexural vibration of single- and two-degree-of-freedom systems. Package II is for torsional and complex flexural vibration systems.

- Easy and fast calculation of fundamental vibration properties of commonly used mechanical systems
- Provides most cost-effective solution for calculating structural design parameters
- User does not need to purchase expensive FAE software for dynamics calculation
- Graphical interface for depicting and understanding different mode shapes
- Reporting feature with facilities for exporting to popular word processing software's
- All in one package that helps to determine the natural frequency of several systems starting from the basic structure properties
- Customize reports in HTML, Word, and Excel formats, presenting graphics, tables and text









Mechanics of Materials

In addition to the topics covered in Vibration Calculations I and II, beam and rigid frames analysis are the key contents of this software. It calculates shear force, bending moment, and deflection for over 100 loading conditions for beams and structures.

- Beams: reaction forces, shear forces, bending, maximum and fixed end moments, slope and deflection of various beam systems, under varying loading conditions
- Rigid frames: the maximum bending moment and moments at varying sections of the beam, the vertical and horizontal components of the frame reactions.
- Graphical display for each loading condition
- User can perform calculations with variety of structural geometries and material to determine the most effective structure to meet design requirements
- Reports can be customized and presented with graphics, tables and text

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