

Key Questions for the Course

1. What is the natural motion of a free, undamped linear oscillator?
2. What is the natural motion of a free, damped linear oscillator?
3. What is the natural motion of a free, undamped nonlinear oscillator?
4. How does the oscillation period of a linear oscillator depend on the amplitude?
5. How does the oscillation period of a nonlinear oscillator depend on the amplitude?
6. What is linear about a linear oscillator?
7. What characteristic of the potential energy is required for a system to oscillate?
8. How does a damped linear oscillator respond to a sinusoidal driving force?
9. How does the response in question 8 depend on the frequency of the driving force?
10. How does a damped linear oscillator respond to an impulsive driving force?
11. How are questions 9 and 10 related?
12. For a linear oscillator driven with a non-sinusoidal source, how does the output depend on the details of the oscillator and on the details on the input?
13. How does a damped nonlinear oscillator respond to a sinusoidal driving force?