Classical physics

-statics

-balanced force on rigid body

-balanced torques

-center of mass and centroid

-trusses and fames

-beams and support reactions

-friction in static system

-equilibrium of particles

-static pressure

-stability and tipping

-combined loading

-motion

-linear motion

-circular motion

-projectile motion

-rotational motion

-relative motion

-motion in a gravitational field

-motion in friction

-uniform and non uniform acceleration

-coupled motion

-spiral motion

-projectile

-basic projectile in 3d

-projectile motion in 3d with air resistance

-projectile motion with rotating earth(coriolis effect)

-projectile motion in non uniform gravitational field

-multi axis projectile motion

-collisions

-elastic collisions

-inelastic collisions

-1d collisions

-2d collisions

-oblique collisions

-multiple collisions

-collisions with barrier

-momentum transfer

-realistic collisions (friction, air resistance and spin)

-energy loss in collisions

-friction

-object in rest

-sliding object in an unsmooth surface

-object rolling down an inclined plane

-friction between surfaces

-friction in rotational motion

-car stimulation in friction

-air resistance and friction in a fall

-energy

-kinetic energy and potential energy in a free falling body

-potential energy in a gravitational field

-energy in a roller coaster system

-energy in simple harmonic oscillator

-energy dissipation

-solar panel energy conversion

-power

-basic power calculations

-Instantaneous power

-power in rotational motion

-mechanical power

-power efficiency

-power in fluids

-spring

-simple spring mass system

-damped harmonic oscillations

-forced harmonic oscillations

-spring in the influence of gravity

-spring with multiple mass

-spring powered canon

-pulley

-simple pulley system

-moveable pulley system

-block and pulley system in an inclined plane

-Atwood machine(two masses and pulley)

-compound pulley system

-pulley with rotational inertia

-pulley with friction

-pulley with variable load

-pulley in space

-gravity

-Gravity between two masses

-orbital motion of planets

-gravity field visualization

-gravitational potential

-multibody gravitational interaction

-black hole visualization

-gravitational slingshot

-tidal forces

-weight on different planets

-gravity waves

-gravity assist trajectories

-Pressure

-pressure

-pressure in fluids

-atmospheric pressure

-pressures in gas

-pressure and surface area

-Bernoulli’s Principle

-pressure in solids

-air pressure supports vehicle weight

-pressure variations in sound waves and shock waves

-elasticity

-Elasticity

-Hooke’s law

-linear elasticity

-non linear elasticity

-Bulk elasticity

-shear elasticity

-elastic potential energy

-stress-strain curve

-poisson’s ratio

-bridge design

-sky scrapers  
 -anisotropic elasticity

-viscoelasticity

-pendulum

-simple pendulum

-Compound pendulum

-damped pendulum

-driven pendulum

-double pendulum

-Foucault pendulum

-pendulum clock

-seismic pendulums

-torsional pendulum

-large angle oscillations

-pendulum arrays

-parametric excitation of pendulum

-elevator

-forces in an elevator

-energy analysis in elevator

-pulley system in elevator

-elevator in free fall

-elevator in sapce

-rotational disk

-rotational motion of disk

-rolling without slipping

-friction in rotational motion

-gyroscopic effects

-flywheels

-spinning tops

-disk brakes

-fluid dynamics

-laminar and turbulent flow

-viscosity and flow resistance

-flow around objects

-hydrostatics

-pressure in fluids

-hydrostatic equilibrium

-buoyancy

-pascal’s law

-fluid pressure in depth

-fluid in a U-tube(manometer)

-open ended sytems (free surface)

-hydrostatic pressure distribution in different geometrics

-sound

-sound waves

-frequency and pitch

-amplitude and loudness

-reflection, refraction and diffraction of sound

-standing waves and resonances

-doppler effect

-interference of sound waves  
 -sound propagation in different media

-waves

-wave types

-wave properties

-wave behaviour

-transverse wave on string

-wave interference

-reflections of waves(boundary collitions)

-wave speed and medium properties

-standing waves(resonance)