Hong Kong Physics Olympiad 2016
2016 香港物理奧林匹克
Scope of Competition 比賽範圍

The scope of the Hong Kong Physics Olympiad 2016 includes the following topics:

2016 香港物理奧林匹克的比賽範圍涉及以下範疇：

矢量可以是3維的。不要求微積分。
Vectors can be 3-dimensional. Calculus is not required.

1. 質點的運動 Motion of Point Particles

1.1 勻加速直線運動
Uniformly accelerated linear motion

1.2 勻加速 2 維運動
Uniformly accelerated motion in two dimensions

1.3 勻速圓周運動
Uniform circular motion

1.4 相對運動和參照系
Relative motion and reference frame

2. 力學 Mechanics

2.1 力學中常見的力：重力、彈力、摩擦力、拉力，等等
Common forces in mechanics: gravity, elastic force, friction, tension, etc.

2.2 牛頓第一、二、三運動定律
Newton's first, second and third laws of motion

2.3 力矩 Torque

2.4 物體的平衡條件和平衡的種類
Conditions for equilibrium of objects and types of equilibrium

2.5 萬有引力定律
Law of Universal Gravitation

2.6 行星和人造衛星勻速圓周運動
Uniform circular motion of planets and satellites

2.7 慣性系和平動、勻速轉動參照系裏的慣性力
Non-inertial frame and inertial force in translational and constant speed rotational frames

2.8 簡諧振動：振幅，頻率，位相，與位移成正比的回復力
Simple harmonic motion: amplitude, frequency, phase, restoring force proportional to displacement

3. 功和機械能 Work and Mechanical Energy

3.1 功和功率
Work and power

3.2 機械能，包括動能, 地球表面附近的重力勢能，均勻球體的萬有引力勢能，叠加原理，彈性勢能，等等
Mechanical energy, including but not limited to, kinetic energy, gravitational potential energy near Earth surface, gravitational potential energy of solid spheres, superposition principle and elastic energy

3.3 功能原理和機械能守恆定律
Work-energy theorem and law of conservation of mechanical energy

4. 動量和衝量 Momentum and Impulse

4.1 動量和衝量
Momentum and impulse

4.2 動量定理和動量守恆定律
Theorem of momentum and law of conservation of momentum

4.3 彈性碰撞、非彈性碰撞和完全非彈性碰撞
Elastic collision, inelastic collision and the completely inelastic collision

4.4 質心 Center of mass