



**Department of Physics
College of Arts and Sciences
American University of Sharjah (AUS)
Fall 2014**

Topics of the Physics Placement Test

The topics that are covered in the physics placement test usually include the followings:

- **Units conversion of physical quantities.**
- **Basic trigonometry:**
 - Right triangle and the trigonometric ratios $\sin(\theta)$, $\cos(\theta)$ and $\tan(\theta)$,
 - Pythagorean theorem,
 - Applying the Sine and Cosine rules to find unknown sides or unknown angles in a triangle.
- **Dimensional analysis.**
- **Motion in 1-dimension:**
 - Describing motion: the meaning of position, displacement, distance, velocity, speed, and acceleration,
 - Kinematics equations for motion with constant acceleration; and their applications in solving problems,
 - Free fall motion,
 - Pictorial representation of motion: The position versus time and the velocity versus time graphs; and the meaning of slope and area in these graphs.
 - Finding the velocity and acceleration by differentiating the time-dependent functions for the position and velocity, respectively.
- **Vector Algebra: different presentations of vectors including the unit vector notations (i and j), component-analysis of vectors, components addition, and finding the magnitude and direction of the resultant (or net) vector of a group of vectors.**
- **Free-body diagrams and applications of Newton's laws.**
- **Kinetic energy and linear momentum.**
- **Gravitational potential energy.**
- **The law of mechanical energy conservation and its applications.**