

# 普通物理 A 一 (科號: 10410PHYS113401)

## General Physics A (I) – Fall, 2015

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### 課程大綱 :

The General Physics A (I) focuses on **mechanical systems** and **thermodynamics** which have been developed over hundreds of years since Isaac Newton. In this course, we will review **Newton's laws of mechanics** and introduce basic concepts of **vector calculus** in the meantime. Not only will the equations of motion be introduced, but also the **concepts of mechanical energy** will be discussed. In addition, we will extend our understandings of the single particle motion to study the motion of many-particle systems such as **rotation of rigid bodies**. In analogy to linear motion, we will introduce moment of inertia and angular momentum of a rigid body, and related interesting applications will be discussed. With the fundamental understandings of the mechanical laws, we will discuss daily life physics phenomena such as **oscillations, waves**, etc. in details. Furthermore, we will start from microscopic view of a many-particle system to construct macroscopic quantities of a system and study how the system responds to environmental changes (That is the concept of work, heat and the laws of **thermodynamics**). We will also introduce the theory of **special relativity**, and **wave optics** if time permits.

上課時間 : T3T4R3R4 (每週二、週四, 早上 10:10 – 12:00)、教室 : 旺宏館 245

課程用書 : University Physics (2<sup>nd</sup> revised edition) by Harris Benson.

### 參考書目 :

1. The Feynman Lectures on Physics, <http://www.feynmanlectures.caltech.edu/>
2. Physics (5<sup>th</sup> edition) by R. Resnick, D. Halliday, and K. S. Krane.

Office Hours : 課後 (旺宏館 245) 以及週三早上 10:00 – 12:00、週四下午 3:00 – 6:00 (物理館 610 室)。

演習課 : 週一晚上 7:00 – 8:00 (物理館 620 室), 週四晚上 7:00 – 8:00 (物理館 504 室)。

評分方式 : 考試 75% (兩次期中考、期末考各佔 25%), 隨堂練習 15%, 作業 10%, Few Extra Credits.

助教 : 陳敬榮 ([j5oh5n5@gmail.com](mailto:j5oh5n5@gmail.com))、李鴻逸 ([riverbirds12@yahoo.com.tw](mailto:riverbirds12@yahoo.com.tw))

其他事項 : 考試請務必帶無記憶功能之計算機。

Last updated on Sept. 15<sup>th</sup>, 2015