

2017 Fall Semester 物理(一)榮譽班 Physics(I) course syllabus

Course Name : (Chinese)物理(一)榮譽班		Dept. of course offering		Physical section		
(English)Physics(I)		Permanent course No.		DEP1113		
Instructor : 羅志偉						
Credits	4	Required/Elective:Required	Required	Grade	*	
Prerequisite :						
無						
Course descriptions and objectives :						
<p>在使學生對生活中常見的基本物理現象有所認識，並了解能其發生之原理或原因，進而養成學生們正確的物理觀念，為將來要修習之高階課程奠定良好的基礎。</p>						
Textbooks: (Please indicate the book's name, author, publisher and the publication date)		"Physics for Scientists and Engineers with Modern Physics", 9th edition, Serway & Jewett				
Course Contents		Hours				Notes
Topics	Outlines	lectures	Demonstration	Practice	Others	
Mechanics	<ol style="list-style-type: none"> <li>1. Physics and Measurement</li> <li>2. Motion in One Dimension</li> <li>3. Vectors</li> <li>4. Motion in Two Dimensions</li> <li>5. The Law of Motion</li> <li>6. Circular Motion and Other Applications of Newton's Laws</li> <li>7. Energy and Energy Transfer</li> <li>8. Potential Energy</li> <li>9. Linear Momentum and Collisions</li> <li>10. Rotation of a Rigid Object About a Fixed Axis</li> <li>11. Angular Momentum</li> <li>12. Static Equilibrium and Elasticity</li> <li>13. Universal Gravitation</li> <li>14. Fluid Mechanics</li> </ol>	32	1	6	5	
Oscillations and Mechanical Waves	<ol style="list-style-type: none"> <li>1. Oscillatory Motion</li> <li>2. Wave Motion</li> <li>3. Sound Waves</li> <li>4. Superposition and Standing</li> </ol>	10	0.5	3	1	
Thermodynamics	<ol style="list-style-type: none"> <li>1. Temperature</li> <li>2. Heat and The First Law of</li> </ol>	18	0.5	5	2	

	Thermodynamics 3. The Kinetic Theory of Gases 4. Heat Engines, Entropy, and the Second Law of Thermodynamics					
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### Description of Course Details :

1. Homework and Assignments, Exams and Quizzes, Evaluation and Grading Policy

期中考(69%)，期末創意發表(21%)，課堂表現(10%)

2. Pedagogy and other supplementary information (websites, TAs, handouts and/or databases)

參考書籍:

- (1) Feynman Lectures on Physics
- (2) PHYSICS for Scientists and Engineers, Tipler and Mosca
- (3) “速成微積分”，劉庭柱 譯，水牛出版社。
- (4) “什麼是微積分”，張鏡清 編譯，建興出版社。

電子講義：

採用 E3 系統：<https://dcpc.nctu.edu.tw/>

教學資源：

應數系微積分網頁：<http://calculus.nctu.edu.tw/resource/riki.php?id=studylink&CID=4>

交大 OCW: [http://ocw.nctu.edu.tw/course\\_list\\_s.php?bgid=1&gid=0](http://ocw.nctu.edu.tw/course_list_s.php?bgid=1&gid=0)

交大 OCW:

[http://ocw.nctu.edu.tw/course\\_list\\_s.php?bgid=1&gid=0](http://ocw.nctu.edu.tw/course_list_s.php?bgid=1&gid=0)

Office hours	Time slot	Location	Contact information
	Wednesday 13:20 ~ 14:10	SC016	56198

### Syllabus

Week	Date	Course Progress, Contents, Topics
1	9/11, 9/14	課程簡介與微積分 (Ch0), 物理學基本概念(Ch1) / Translational motion described by force (Ch2)
2	9/18, 9/21	Translational motion described by force (Ch3, Ch4)
3	09/25, 09/28	Translational motion described by force (Ch5, Ch6)
4	10/02, 10/05	Translational motion described by force (Ch6) / Translational motion described by energy (Ch7)
5	10/12	Translational motion described by energy (Ch7, Ch8)
6	10/16, 10/19	Translational motion described by energy (Ch8) / 期中考
7	10/23, 10/26	Rotational motion (Ch9)
8	10/30, 11/02	Rotational motion (Ch10)
9	11/06,	Rotational motion (Ch11) / Static equilibrium (Ch12)

	11/09	
10	11/13, 11/16	Universal gravitation (Ch13) / Fluid mechanics (Ch14)
11	11/20, 11/23	Fluid mechanics (Ch14) / Vibrational motion (Ch15)
12	11/27, 11/30	Vibrational motion (Ch16) / 期中考
13	12/04, 12/07	Vibrational motion (Ch17, Ch18)
14	12/11, 12/14	Thermodynamics (Ch19, Ch20)
15	12/18, 12/21	Thermodynamics (Ch20, Ch21)
16	12/25, 12/28	Thermodynamics (Ch21, Ch22) / 期中考
17	01/04	期末創意發表