



## 教學計劃表 Syllabus

課程名稱(中文) Course Name in Chinese	統計物理AA			學年/學期 Academic Year/Semester	114/2				
課程名稱(英文) Course Name in English	Introductory Statistical Mechanics								
科目代碼 Course Code	PHYS3070AA	系級 Department & Year	學三	開課單位 Course-Offering Department	物理學系				
修別 Type	學程 Program	學分數/時間 Credit(s)/Hour(s)		3.0/3.0					
授課教師 Instructor	/張俊明								
先修課程 Prerequisite									

## 課程描述 Course Description

從微觀的角度出發,利用統計力學的方法來處理大量粒子集合之系統,並推得系統的巨觀熱力學性質

## 課程目標 Course Objectives

系專業能力 Basic Learning Outcomes		課程目標與系專業能力相關性 Correlation between Course Objectives and Dept.'s Education Objectives
A	具備物理之基礎背景知識 Possessing fundamental knowledge in physical sciences.	●
B	能運用基本物理知識與邏輯推理，分析解決物理問題 Being able to analyze and solve physics problems based on basic knowledge in physics as well as logical reasoning.	●
C	對目前測量器材有基礎認識，且具有操作物理實驗儀器的能力 Being acquainted with modern equipment and being able to operate them for performing physics experiments.	
D	能使用基礎電腦程式語言解決物理問題 Being able to use basic computer programming for solving physics problems.	○
E	善用各種資訊平台進行論文資料蒐集的能力 Being able to use various platforms for data collection benefiting a topical research.	
F	具備科技發展的國際視野以及外語溝通的能力 Having an international view of the technology developments and being able to use a foreign language for communications	
G	能整合物理與其它領域知識 Being able to integrate the knowledge of physics with that of other fields.	

圖示說明 Illustration : ● 高度相關 Highly correlated ○ 中度相關 Moderately correlated

## 授課進度表 Teaching Schedule &amp; Content

週次 Week	內容 Subject/Topics	備註 Remarks
1	Preparation & Introduction & The kinetic theory of gases	
2	The kinetic theory of gases	
3	Statistical thermodynamics	
4	Statistical thermodynamics	

5	Classical and quantum statistics	
6	Classical and quantum statistics	
7	The classical statistical treatment of an ideal gas	
8	REVIEW TEST & Discussion of REVIEW TEST	
9	期中考	
10	The heat capacity of a diatomic gas	
11	The heat capacity of a solid	
12	Fermi-Dirac gases	
13	Fermi-Dirac gases	
14	Bose-Einstein Gases	
15	TEST & REVIEW	
16	統物期末考	
17	學校期末考試週 Final Exam	
18	自主學習週	

#### 教 學 策 略 Teaching Strategies

課堂講授 Lecture       分組討論 Group Discussion       參觀實習 Field Trip  
 其他 Miscellaneous:

#### 教 學 創 新 自 評 Teaching Self-Evaluation

##### 創新教學 (Innovative Teaching)

問題導向學習 (PBL)       團體合作學習 (TBL)       解決導向學習 (SBL)  
 翻轉教室 Flipped Classroom       磨課師 Moocs

##### 社會責任 (Social Responsibility)

在地實踐 Community Practice       產學合作 Industy-Academia Cooperation

##### 跨域合作 (Transdisciplinary Projects)

跨界教學 Transdisciplinary Teaching       跨院系教學 Inter-collegiate Teaching

業師合授 Courses Co-taught with Industry Practitioners

##### 其它 other:

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學期成績計算及多元評量方式 Grading & Assessments

配分項目 Items	配分比例 Percentage	多元評量方式 Assessments						
		測驗 會考	實作 觀察	口頭 發表	專題 研究	創作 展演	卷宗 評量	證照 檢定
平時成績(含出缺席) General Performance (Attendance Record)								
期中考成績 Midterm Exam	35%	✓						
期末考成績 Final Exam	35%	✓						
作業成績 Homework and/or Assignments	30%	✓						
其他 Miscellaneous (_____)								

評量方式補充說明  
Grading & Assessments Supplemental instructions

教科書與參考書目 (書名、作者、書局、代理商、說明)

Textbook & Other References (Title, Author, Publisher, Agents, Remarks, etc.)

Textbook: “Classical and Statistical Thermodynamics”, Ashley H. Carter (Prentice Hall).

課程教材網址(含線上教學資訊, 教師個人網址請列位於本校內之網址)

Teaching Aids & Teacher's Website (Including online teaching information.

Personal website can be listed here.)

其他補充說明 (Supplemental instructions)