



## 教學計劃表 Syllabus

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| 課程名稱(中文)<br>Course Name in Chinese                                                                                                                                                                            | 應用數學演習(二)AB                                                                                                                                 |                             |    | 學年/學期<br>Academic Year/Semester    | 113/2                                                                                   |
| 課程名稱(英文)<br>Course Name in English                                                                                                                                                                            | Applied Mathematics (II): Recitation                                                                                                        |                             |    |                                    |                                                                                         |
| 科目代碼<br>Course Code                                                                                                                                                                                           | PHYS2122AB                                                                                                                                  | 系級<br>Department & Year     | 學二 | 開課單位<br>Course-Offering Department | 物理學系                                                                                    |
| 修別<br>Type                                                                                                                                                                                                    | 學程 Program                                                                                                                                  | 學分數/時間<br>Credit(s)/Hour(s) |    | 1.0/1.0                            |                                                                                         |
| 授課教師<br>Instructor                                                                                                                                                                                            | /劉承邦                                                                                                                                        |                             |    |                                    |                                                                                         |
| 先修課程<br>Prerequisite                                                                                                                                                                                          |                                                                                                                                             |                             |    |                                    |                                                                                         |
| 課程描述 Course Description                                                                                                                                                                                       |                                                                                                                                             |                             |    |                                    |                                                                                         |
| 1. 本演習配合主課程「應用數學(一)」之授課，以例題講解之方式加強學生對授課內容的了解與實際思考及解題的能力。<br>2. 修習本課程者必須同時選修主課程「應用數學(一)」。<br>3. 本課程首日上課(課程概要與解說)併入主課程「應用數學(一)」之首日上課時間。<br>4. 本演習為學習輔助課程，學生可依個人學習狀況自主選擇是否修習；演習課中討論的例題及類似題目不會與主課程「應用數學(一)」之考題重複。 |                                                                                                                                             |                             |    |                                    |                                                                                         |
| 課程目標 Course Objectives                                                                                                                                                                                        |                                                                                                                                             |                             |    |                                    |                                                                                         |
| 配合應用數學(二)之授課，以例題講解之方式加強學生對授課內容的了解與實際思考及解題的能力。                                                                                                                                                                 |                                                                                                                                             |                             |    |                                    |                                                                                         |
| 系專業能力<br>Basic Learning Outcomes                                                                                                                                                                              |                                                                                                                                             |                             |    |                                    | 課程目標與系專業能力相關性<br>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 & Content                                                                                                                                                                             |                                                                                                                                             |                             |    |                                    |                                                                                         |
| 週次Week                                                                                                                                                                                                        | 內容 Subject/Topics                                                                                                                           |                             |    |                                    | 備註Remarks                                                                               |
| 1                                                                                                                                                                                                             | 詳見課程首日發放之書面公告。                                                                                                                              |                             |    |                                    |                                                                                         |
| 2                                                                                                                                                                                                             |                                                                                                                                             |                             |    |                                    |                                                                                         |

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| 8  |                    |  |
| 9  | 期中考試週 Midterm Exam |  |
| 10 |                    |  |
| 11 |                    |  |
| 12 |                    |  |
| 13 |                    |  |
| 14 |                    |  |
| 15 |                    |  |
| 16 |                    |  |
| 17 | 期末考試週 Final Exam   |  |
| 18 | 彈性補充教學             |  |

#### 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: 作業

#### 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 Industry-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<br>Items                                                                                                                                                                                                                                                                                                                                                                                              | 配分比例<br>Percentage | 多元評量方式 Assessments |          |          |          |          |          |          |    |
|                                                                                                                                                                                                                                                                                                                                                                                                            |                    | 測驗<br>會考           | 實作<br>觀察 | 口頭<br>發表 | 專題<br>研究 | 創作<br>展演 | 卷宗<br>評量 | 證照<br>檢定 | 其他 |
| 平時成績(含出缺席)<br>General Performance<br>(Attendance Record)                                                                                                                                                                                                                                                                                                                                                   |                    |                    |          |          |          |          |          |          |    |
| 期中考成績 Midterm Exam                                                                                                                                                                                                                                                                                                                                                                                         |                    |                    |          |          |          |          |          |          |    |
| 期末考成績 Final Exam                                                                                                                                                                                                                                                                                                                                                                                           |                    |                    |          |          |          |          |          |          |    |
| 作業成績 Homework and/or<br>Assignments                                                                                                                                                                                                                                                                                                                                                                        |                    |                    |          |          |          |          |          |          |    |
| 其他 Miscellaneous<br>(同主課程「應用數學<br>(二)」之成績)                                                                                                                                                                                                                                                                                                                                                                 | 100%               |                    |          |          |          |          |          |          |    |
| 評量方式補充說明<br>Grading & Assessments Supplemental instructions                                                                                                                                                                                                                                                                                                                                                |                    |                    |          |          |          |          |          |          |    |
| 教科書與參考書目(書名、作者、書局、代理商、說明)<br>Textbook & Other References (Title, Author, Publisher, Agents, Remarks, etc.)                                                                                                                                                                                                                                                                                                 |                    |                    |          |          |          |          |          |          |    |
| 本課程無指定教科書，學生可依個人喜好於以下建議書單中任擇一二：<br>1. Mathematical Methods for Physics and Engineering (3rd ed.), K.F. Riley, M.P. Hobson, and S.J. Bence, Cambridge University Press (2006), 滄海書局。<br>2. Advanced Engineering Mathematics (10th ed. update), E. Kreyszig, Wiley (2018), 滄海書局。<br>3. Mathematical Methods for Physicists (7th ed.), G.B. Arfken, H.J. Weber, and F.E. Harris, Academic Press (2012), 偉明圖書。 |                    |                    |          |          |          |          |          |          |    |
| 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)<br>Teaching Aids & Teacher's Website(Including online teaching information.<br>Personal website can be listed here.)                                                                                                                                                                                                                                                      |                    |                    |          |          |          |          |          |          |    |
| 其他補充說明 (Supplemental instructions)                                                                                                                                                                                                                                                                                                                                                                         |                    |                    |          |          |          |          |          |          |    |
| 本教學計劃僅供參考。詳細的授課進度，學期成績計算與評量方式，及課程相關規定以任課教師與助教書面公告者為準。                                                                                                                                                                                                                                                                                                                                                      |                    |                    |          |          |          |          |          |          |    |