

C 表 109 學年度 三一學程（電子物理學系，光電工程學系，材料工程學系）

跨域模組課程 必修科目表

The Required Course List for students who study cross-disciplinary program and choose 「Three-in-one (Electrophysics/Photonics/Material)」 as their cross-disciplinary specialty

108 年 12 月 31 日 108 學年度第 2 次教務會議核備通過

108 年 12 月 9 日 108 學年度第 3 次課程委員會通過

108 年 6 月 6 日 107 學年度第 4 次教務會議核備

108 年 5 月 23 日 107 學年度第 2 次課程委員會通過

105 年 6 月 8 日 104 學年度第 5 次教務會議核備

| 類別 Category | 科目名稱 Course Name | 學分 Credit | 開課系所 Department | 備註 Remark |
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| 三一學程跨域 模組 (28 學分) Cross- disciplinary modules in Three-in-one program (28 credits) 修畢於畢業證 書加註『跨域 專長：三一學 程(電子物理/ 光電/材料)』 It could be remarked as “Cross- Disciplinary Specialty : Three-in-one (Electrophysic s/Photonics/M aterial)” on the diploma after the module curriculum is completed. | 模組一：理論與計算物理 Module 1:Theoretical and Computational Physics | | | [物理建模與計算實作] 於 107 學年度開課 [Physical Modelling and Computations labs.] will be opened in academic year 2018. |
| | 近代物理(一) Modern Physics (I) | 3 | 電物 Electrophysics | |
| | 量子力學導論 Int. to Quantum Mechanics | 3 | 電物 Electrophysics | |
| | 計算物理 Computational Physics | 3 | 電物 Electrophysics | |
| | 物理建模與計算實作 Physical Modelling and Computations labs. | 3 | 電物 Electrophysics | |
| | 探索 X 實作 X-exploring Implementation | 2 | 電物 Electrophysics | |
| | 模組二：半導體及量子科技 Module 2:Semiconductor and Quantum technology | | | ¹ 電物系[半導體物理及元 件]和光電系[半導體元件 及物理]請擇一修習 To avoid duplication, please only choose one of the following two courses: [Semiconductor Physics and Devices](Electrophysics) and [Semiconductor Devices and Physics](Photonics) |
| | 近代物理(一) Modern Physics (I) | 3 | 電物 Electrophysics | |
| | 半導體物理及元件 ¹ Semiconductor Physics and Devices | 3 | 電物 Electrophysics | |
| | 固態物理(一) Solid State Physics (I) | 3 | 電物 Electrophysics | |
| | 電子實驗 Electronics Labs. | 2 | 電物 Electrophysics | |
| | 探索 X 實作 X-exploring Implementation | 2 | 電物 Electrophysics | |
| | 模組三：雷射與光電科技 Module 3:Laser and Optoelectronics technology | | | |
| | 電磁學(一) Electromagnetics (I) | 3 | 電物 Electrophysics | |
| | 光學概論(一) Introduction to Optics(I) | 3 | 電物 Electrophysics | |
| 雷射導論 Introduction to Laser | 3 | 電物 Electrophysics | | |
| 實驗物理 Experimental Physics | 2 | 電物 Electrophysics | | |

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| 探索 X 實作 X-exploring Implementation | 2 | 電物 Electrophysics | |
| 模組四：智慧光源 Module 4: Intelligent Light Source 光子學(一) Elements of Photonics(I) 近代物理 ² Modern Phycis 材料光學 Optical Properties of Materials 智慧光源科技與實作 Smart light source technology | 3 3 3 3 | 光電 Photonics 光電 Photonics 光電 Photonics | ² 修電物系[近代物理(一)]等同於光電系[近代物理][Modern Physics](Photonics) is the same as [Modern Physics (I)] (Electrophysics) |
| 模組五：光設計與光調變 Module 5 : Light Design and Modulation 光子學(一) Elements of Photonics(I) 光學設計與像差理論 Optical design and aberration theory 富氏光學 Fourier Optics 矽基液晶光學系統設計與實作 Optical Laboratory Based on Liquid Crystal on Silicon | 3 3 3 3 | 光電 Photonics 光電 Photonics 光電 Photonics 光電 Photonics | |
| 模組六：感測與顯示 Module 6: Sensing and Display 半導體元件及物理 ¹ Semiconductor Devices & Physics 感測器基礎實作與嵌入式系統應用 Solid-State Sensor and Embedded System 顯示電子電路 Electronic Circuits for Displa 光電生化感測元件 ³ Bio-chemical sensors based on electric and optical devices | 3 3 3 3 | 光電 Photonics 光電/電機合開 Photonics/ Electrical Engineering 光電 Photonics 光電 Photonics | ¹ 電物系[半導體物理及元件]和光電系[半導體元件及物理]請擇一修習 To avoid duplication, please only choose one of the following two courses: [Semiconductor Physics and Devices](Electrophysics) and [Semiconductor Devices and Physics](Photonics) ³ [生化感測元件]修課需具備[半導體元件物理]基礎 [Bio-Chemical Sensors] the pre-requirement is [Semiconductor Devices and Physics] |
| 模組七：材料結構與鑑定 Module 7: Structure Characterization of Materials 材料科學與工程導論 (一) Introduction to Materials Science and Engineering (I) | 3 | 材料 Material | |

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| 晶體結構與繞射導論 Introduction to Crystallography and Diffraction | 3 | 材料 Material | |
| 材料微觀結構分析 Microstructural Characterization of Materials | 3 | 材料 Material | |
| 模組八：材料製造 Module 8: Fabrication of Materials | | | |
| 材料工程實驗(一) Advanced Materials Labs.(I) | 2 | 材料 Material | |
| 材料基礎實驗(一) Elementary Materials Labs.(I) | 2 | 材料 Material | |
| 材料基礎實驗(二) Elementary Materials Labs.(II) | 2 | 材料 Material | |
| 半導體製程 Semiconductor Processing | 3 | 材料 Material | |
| 模組九：材料特性 Module 9: Properties of Materials | | | |
| 材料機械性質 Mechanical Behavior of Metal | 3 | 材料 Material | |
| 材料物理性質 Physical Properties of Materials | 3 | 材料 Material | |
| 電子材料 Electronic Materials | 3 | 材料 Material | |
| 模組十：生醫工程 Module 10: Biomedical Engineering | | | |
| 生醫訊號暨實作 Introduction to Biomedical Physics and Implementation (I) | 3 | 電物 Electrophysics | |
| 生醫光子學導論 Introduction to Biophotonics | 3 | 光電 Photonics | |
| 奈米生醫材料簡介 Introduction to Nano-Biomaterials | 3 | 材料 Material | |
| 總學分 Total | 28 | 修課條件：Requirements: 1. 必選學分(16-18 學分)：自選三個模組，此三個模組的每個模組需至少修畢兩門課程，共六門必選課程。Required courses (16-18 credits): Choose 3 modules from the 10 to serve as the required modules. Take 2 courses in every required module. 2. 其餘學分可從十個模組的課程中自由選擇。Optional courses: for the remaining credits, freely choose among the 10 modules. 3. 滿足上述條件並修滿 28 學分則完成此跨域學程。The cross-disciplinary program | |

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| | | is completed after obtaining total 28 credits and satisfying the above two conditions. |
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