

# 明志科技大學四技部 113 學年度入學 半導體材料與製程學士學位學程 課程總表

113/10/08 校課程委員會會議通過  
113/10/01 院課程會議通過  
113/09/24 學程課程委員會會議通過

|  | 科 目<br>名 標  | 學 分      |          |          |          |          |          |          |          |         |    |    |    |        |      | 備註    |     |
|--|---|----------|----------|----------|----------|----------|----------|----------|----------|---------|----|----|----|--------|------|-------|-----|
|  |   | 一上<br>學分 | 一下<br>時數 | 二上<br>學分 | 二下<br>時數 | 三上<br>學分 | 三下<br>時數 | 四上<br>學分 | 四下<br>時數 | 總<br>學分 |    |    |    |        |      |       |     |
| 基礎課程<br>共計<br>22<br>學分                           | 文學藝術與情感表達(Appreciation of Literature and Emotional Expression)        | 2        | 2        |          |          |          |          |          |          |         |    |    |    |        |      |       |     |
|  | 永續發展與社會實踐(Sustainable Development and Social Practice)                | 1        | 1        |          |          |          |          |          |          |         |    |    |    |        |      |       |     |
|  | 生活與職場英文(一)(二)(English for Life and Business (I)-(II))                 | 3        | 3        | 3        | 3        |          |          |          |          |         |    |    |    |        |      |       |     |
|  | 全民國防教育軍事訓練(一)(二)(All-out Defense Education Military Training(I)-(II)) | 0.5      | 2        | 0.5      | 2        |          |          |          |          |         |    |    |    |        |      |       |     |
|  | 體育(四)(Physical Education(IV))   | 1        | 2        | 1        | 2        | 1        | 2        | 1        | 2        |         |    |    |    |        |      |       |     |
|  | 藝術涵養與社會參與(Art Literacy and Social Participation)                      |          |          | 2        | 2        |          |          | 2        | 2        |         |    |    |    |        |      |       |     |
|  | 歷史思維與多元文化領域(Historical Thinking and Multicultural Studies)            |          |          |          |          | 1        | 2        | 1        | 2        |         |    |    |    |        |      |       |     |
|  | 英語聆聽(Aural-Oral English)  |          |          |          |          |          |          |          |          | 1       | 2  | 1  | 2  |        |      |       |     |
|  | 英文實務(一)(二)(Practical English(I)-(II))                                 |          |          |          |          |          |          |          |          | 1       | 2  | 1  | 2  |        |      |       |     |
|  | 合計  | 7.5      | 10       | 6.5      | 9        | 2        | 4        | 4        | 6        |         | 1  | 2  | 1  | 2      | 22   |       |     |
| 核心<br>學分<br>共<br>同<br>必<br>修<br>課<br>校<br>學<br>分 | 大學之道(The Goal of University Education)                                | 1        | 2        |          |          |          |          |          |          |         |    |    |    |        |      |       |     |
|  | 設計思維(Design Thinking)   |          |          | 1        | 1        |          |          |          |          |         |    |    |    |        | 2    |       |     |
|  | 合計  | 1        | 2        | 1        | 1        |          |          |          |          |         | 1  | 1  | 17 |        | 18   |       |     |
|  | 實習前職場素養訓練(Professionism Prior to Practical Training)                  |          |          |          |          |          |          | 1        | 1        |         |    |    |    |        |      |       |     |
| 共同必修課<br>共<br>同<br>必<br>修<br>課<br>校<br>學<br>分    | 工讀實務實習(一)(Practical Training Curriculum (1))                          |          |          |          |          |          |          |          |          |         |    |    | 4  |        |      |       |     |
|  | 工讀實務實習(二)(Practical Training Curriculum (2))                          |          |          |          |          |          |          |          |          |         |    |    | 4  |        |      |       |     |
|  | 工讀實務實習(三)(Practical Training Curriculum (3))                          |          |          |          |          |          |          |          |          |         |    |    | 4  |        |      |       |     |
|  | 工讀實務實習(四)(Practical Training Curriculum (4))                          |          |          |          |          |          |          |          |          |         |    |    | 5  |        |      |       |     |
|  | 合計  |          |          |          |          |          |          |          |          |         | 1  | 1  | 17 |        | 18   |       |     |
|  | 微積分(Calculus)   | 3        | 3        |          |          |          |          |          |          |         |    |    |    |        |      |       |     |
|  | 普通物理(General Physics)   | 2        | 2        |          |          |          |          |          |          |         |    |    |    |        |      |       |     |
|  | 普通化學實驗(一)(General Chemistry and Experiment I)                         | 2        | 2        |          |          |          |          |          |          |         |    |    |    | 實作課程   |      |       |     |
|  | 材料科學導論(一)(Introduction to Material Science I)                         | 2        | 2        |          |          |          |          |          |          |         |    |    |    | 實作課程   |      |       |     |
|  | 普通化學實驗(二)(General Chemistry and Experiment II)                        |          |          | 2        | 2        |          |          |          |          |         |    |    |    |        |      |       |     |
| 專業必修課程<br>共<br>同<br>必<br>修<br>課<br>校<br>學<br>分   | 工業安全與衛生(Industrial Safety and Hygiene)                                |          |          | 2        | 2        |          |          |          |          |         |    |    |    |        |      |       |     |
|  | 材料科學導論(一)(Introduction to Material Science II)                        |          |          | 2        | 2        |          |          |          |          |         |    |    |    |        |      |       |     |
|  | 半導體物理(Semiconductor Physics)  |          |          | 2        | 2        |          |          |          |          |         |    |    |    |        |      |       |     |
|  | 機器學習數學(Mathematics of Machine Learning)                               |          |          | 2        | 2        |          |          |          |          |         |    |    |    |        |      |       |     |
|  | 半導體產業實務(Professional Semiconductor Industry)                          |          |          |          |          | 2        | 2        |          |          |         |    |    |    | 產學共構課程 |      |       |     |
|  | 質能均衡(Mass and Energy Balances)  |          |          |          |          | 2        | 2        |          |          |         |    |    |    |        |      |       |     |
|  | 程式設計(一)(Computer Programming I)                                       |          |          |          |          | 2        | 2        |          |          |         |    |    |    |        |      |       |     |
|  | 物理化學(一)(Physical Chemistry I)   |          |          |          |          | 2        | 2        |          |          |         |    |    |    |        |      |       |     |
|  | 工程數學(一)(Engineering Mathematics I)                                    |          |          |          |          | 2        | 2        |          |          |         |    |    |    |        |      |       |     |
|  | 程式設計(二)(Computer Programming II)                                      |          |          |          |          | 2        | 2        |          |          |         |    |    |    |        |      |       |     |
| 專業必修課程<br>59<br>學分                               | 程式設計(三)(Computer Programming III)                                     |          |          |          |          | 2        | 2        |          |          |         |    |    |    |        |      |       |     |
|  | 物理化學(二)(Physical Chemistry II)  |          |          |          |          | 2        | 2        |          |          |         |    |    |    |        |      |       |     |
|  | 工程數學(二)(Engineering Mathematics II)                                   |          |          |          |          | 2        | 2        |          |          |         |    |    |    |        |      |       |     |
|  | 流體力學(Fluid Mechanics)   |          |          |          |          | 2        | 2        |          |          |         |    |    |    |        |      |       |     |
|  | 熱能與質量傳輸(Heat and Mass Transfer)                                       |          |          |          |          | 2        | 2        |          |          |         |    |    |    |        |      |       |     |
|  | 半導體製程實驗(一)(Semiconductor Fabrication and Experiment I)                |          |          |          |          |          |          | 2        | 2        |         |    |    |    | 實作課程   |      |       |     |
|  | 材料分析暨實驗(Material Analysis and Experiment)                             |          |          |          |          |          |          | 2        | 2        |         |    |    |    | 實作課程   |      |       |     |
|  | 儀器分析暨實驗(Instrument Analysis and Experiment)                           |          |          |          |          |          |          | 2        | 2        |         |    |    |    | 實作課程   |      |       |     |
|  | 電化學工程(Electrochemical Engineering)                                    |          |          |          |          |          |          | 2        | 2        |         |    |    |    |        |      |       |     |
|  | 工程統計(Engineering Statistics)  |          |          |          |          |          |          |          |          | 2       | 2  |    |    |        |      |       |     |
| 專業選修課程<br>共<br>同<br>選<br>修                       | 反應工程(Chemical Reaction Engineering)                                   |          |          |          |          |          |          |          |          |         | 2  | 2  |    |        |      |       |     |
|  | 半導體製程實驗(二)(Semiconductor Fabrication and Experiment II)               |          |          |          |          |          |          |          |          | 2       | 2  |    |    |        |      |       |     |
|  | 工程倫理與實務講座(Engineering Ethics and Professional Topics)                 |          |          |          |          |          |          |          |          | 2       | 2  |    |    | 演講式課程  |      |       |     |
|  | 實務專題(一)(Special Topics in Practice I)                                 |          |          |          |          |          |          |          |          | 1       | 2  |    |    | 實作課程   |      |       |     |
|  | 半導體製程實驗(三)(Semiconductor Fabrication and Experiment III)              |          |          |          |          |          |          |          |          |         |    | 2  | 2  | 實作課程   |      |       |     |
|  | 半導體實務講座(Professional Semiconductor Topics)                            |          |          |          |          |          |          |          |          |         |    | 1  | 2  | 演講式課程  |      |       |     |
|  | 實務專題(二)(Special Topics in Practice II)                                |          |          |          |          |          |          |          |          |         |    | 1  | 2  | 實作課程   |      |       |     |
|  | 合計  | 9        | 9        | 10       | 10       | 10       | 10       | 10       | 10       | 8       | 8  | 0  | 0  | 8      | 11   | 46 59 |     |
| 專業選修課程<br>共<br>同<br>選<br>修                       | 電磁學(Electromagnetism)   | 3        | 3        |          |          |          |          |          |          |         |    |    |    |        |      |       |     |
|  | 近代物理(Modern Physics)  |          | 3        | 3        |          |          |          |          |          |         |    |    |    |        |      |       |     |
|  | 半導體實務專題(一)(Semiconductor Special Topics in Practice I)                |          |          |          | 1        | 2        |          |          |          |         |    |    |    | 實作課程   |      |       |     |
|  | 有機化學(Organic Chemistry)   |          |          |          | 3        | 3        |          |          |          |         |    |    |    |        |      |       |     |
|  | 能源工程概論(Introduction to Energy Engineering)                            |          |          |          | 3        | 3        |          |          |          |         |    |    |    |        |      |       |     |
|  | 半導體設備概論(Introduction to Semiconductor Equipment)                      |          |          |          | 2        | 2        |          |          |          |         |    |    |    |        |      |       |     |
|  | 分析化學(Analytical Chemistry)  |          |          |          |          | 3        | 3        |          |          |         |    |    |    | 實作課程   |      |       |     |
|  | 半導體實務專題(二)(Semiconductor Special Topics in Practice II)               |          |          |          | 1        | 2        |          |          |          |         |    |    |    | 實作課程   |      |       |     |
|  | 半導體實務專題(三)(Semiconductor Special Topics in Practice III)              |          |          |          |          | 1        | 2        |          |          |         |    |    |    | 實作課程   |      |       |     |
|  | 數值分析(Numerical Analysis)  |          |          |          |          |          |          | 3        | 3        |         |    |    |    |        |      |       |     |
| 專業選修課程<br>(至少<br>15<br>學<br>分)                   | 感測原理與應用(Principles and Applications of Sensors)                       |          |          |          |          |          |          |          |          | 3       | 3  |    |    |        |      |       |     |
|  | 奈米觸媒技術與應用(Nanocatalytic Technology and Application)                   |          |          |          |          |          |          |          |          | 3       | 3  |    |    |        |      |       |     |
|  | 產業技術及問題解決(Problem Solving and Technical Communication)                |          |          |          |          |          |          |          |          | 3       | 3  |    |    |        |      |       |     |
|  | 鋰電池產業專題講座(Lecture on Lithium Battery Industry Practice)               |          |          |          |          |          |          |          |          | 3       | 3  |    |    |        |      |       |     |
|  | 綠色製程概論(Introduction to Green Fabrication)                             |          |          |          |          | 3        | 3        |          |          |         |    |    |    |        |      |       |     |
|  | 真空技術與實務(Vacuum Technology and Practice)                               |          |          |          |          | 3        | 3        |          |          |         |    |    |    |        |      |       |     |
|  | 奈米材料與製程導論(Introduction to Energy Materials and Processes)             |          |          |          |          | 3        | 3        |          |          |         |    |    |    |        |      |       |     |
|  | 工業與環境毒物學(Industrial and Environmental Toxicology)                     |          |          |          |          |          | 3        | 3        |          |         |    |    |    |        |      |       |     |
|  | 電池製造技術(Battery Process Technology)                                    |          |          |          |          |          | 3        | 3        |          |         |    |    |    |        |      |       |     |
|  | 公用設施(Utility Installations)   |          |          |          |          |          |          | 3        | 3        |         |    |    |    |        |      |       |     |
| 專業選修課程<br>(至少<br>15<br>學<br>分)                   | 熱力學(Thermodynamics)   |          |          |          |          |          |          | 3        | 3        |         |    |    |    |        |      |       |     |
|  | 廢棄物處理(Solid Waste Treatment and Disposal)                             |          |          |          |          |          |          | 3        | 3        |         |    |    |    |        |      |       |     |
|  | 電池組裝與分析實作(Battery Assembly and Analysis Practice)                     |          |          |          |          |          |          | 3        | 3        |         |    |    |    | 實作課程   |      |       |     |
|  | 綠色化學技術論述(Green Chemistry Technology Forum)                            |          |          |          |          |          |          |          |          | 3       | 3  |    |    |        |      |       |     |
|  | 化工基礎概念解析(Fundamental Conception Analysis of Chemical Engineering)     |          |          |          |          |          |          |          |          | 3       | 3  |    |    |        |      |       |     |
|  | 電漿製程(Plasma Processing)   |          |          |          |          |          |          |          |          | 3       | 3  |    |    |        |      |       |     |
|  | 薄膜製程(The Film Processing)   |          |          |          |          |          |          |          |          | 3       | 3  |    |    |        |      |       |     |
|  | 程序控制與實驗(Processor Control and Experiment)                             |          |          |          |          |          |          |          |          | 3       | 3  |    |    |        |      |       |     |
|  | 半導體元件與製程整合(Semiconductor Devices and Process Integration)             |          |          |          |          |          |          |          |          |         |    | 2  | 2  |        | 實作課程 |       |     |
|  | 廢棄物資源化工程(Waste Resourceization Engineering)                           |          |          |          |          |          |          |          |          |         |    | 3  | 3  |        |      |       |     |
| 材料組<br>選修<br>(至少<br>15<br>學<br>分)                | 電路板與半導體製作(Fabrication of Semiconductor and PCB)                       |          |          |          |          |          |          |          |          |         |    | 3  | 3  |        |      |       |     |
|  | 光學材料製程服務(Practice of Optoelectronic Materials)                        |          |          |          |          |          |          |          |          |         |    | 3  | 3  |        |      |       |     |
|  | 材料分析概論(Introduction to Material Analysis)                             |          |          |          |          |          |          |          |          |         |    | 3  | 3  |        |      |       |     |
|  | 高分子材料(Polymeric Materials)  |          |          |          |          |          |          |          |          |         |    | 3  | 3  |        |      |       |     |
|  | 金屬材料(Metallic Materials)  |          |          |          |          |          |          |          |          |         |    | 3  | 3  |        |      |       |     |
|  | 電子材料(Electronic Materials)  |          |          |          |          |          |          |          |          |         |    | 3  | 3  |        |      |       |     |
|  | 材料化學性質(Chemical Properties of Materials)                              |          |          |          |          |          |          |          |          |         |    | 3  | 3  |        |      |       |     |
|  | 電池材料與分析實作(Battery Materials and Analysis Practice)                    |          |          |          |          |          |          |          |          |         |    | 3  | 3  |        | 實作課程 |       |     |
|  | 奈米材料與技術(Nanomaterial and Technology)                                  |          |          |          |          |          |          |          |          |         |    | 3  | 3  |        |      |       |     |
|  | 奈米檢測分析實驗(Experiments on Nano-characterization)                        |          |          |          |          |          |          |          |          |         |    | 3  | 3  |        |      |       |     |
| 院專業選修<br>程                                       | 電池檢測與分析技術(Battery Testing and Analysis Technology)                    |          |          |          |          |          |          |          |          |         |    | 3  | 3  |        |      |       |     |
|  | 奈米材料與技術(Nanomaterial and Technology)                                  |          |          |          |          |          |          |          |          |         |    | 3  | 3  |        |      |       |     |
|  | 奈米檢測分析實驗(Experiments on Nano-characterization)                        |          |          |          |          |          |          |          |          |         |    | 1  | 3  |        | 實作課程 |       |     |
|  | 光電半導體材料(Optoelectronics & Semiconductor Materials)                    |          |          |          |          |          |          |          |          |         |    | 3  | 3  |        |      |       |     |
| 院專業選修<br>程                                       | 合計  | 3        | 3        | 6        | 6        | 21       | 22       | 19       | 20       | 19      | 20 | 12 | 12 | 27     | 27   | 21    | 128 |
|  | 基石專題(Cornerstone project)   |          |          |          |          | 1        | 3        |          |          |         |    |    |    |        |      |       |     |
|  | 奈米光觸媒的綠色環境應用(Green application of nano-photocatalysis)                |          |          |          |          |          |          | 3        | 3        |         |    |    |    |        |      |       |     |
|  | 頂石專題(Capstone Project)  |          |          |          |          |          |          |          |          | 1       | 3  |    |    |        |      |       |     |
| 院專業選修<br>程                                       | 合計  | 0        | 0        | 1        | 3        | 0        | 0        | 3        | 3        | 1       | 3  | 0  | 0  | 0      | 0    | 0     | 0   |

1.學生最少修滿148分，包含共同必修20分、通識選修8分、專業必修59分、專業選修39分。

2.本學程專業選修為「製程模組」、「材料模組」，兩者至少一類組合15學分以上，並取得專業選修共計39學分以上，始得畢業。

3.已修畢之專業選修必修學分(含技術選修)，無計算為專業選修分。