

國立暨南國際大學 應用材料及光電工程 學系 學士班 必修科目一覽表

Undergraduate Program Course Catalog of Department of Applied Materials and Optoelectronic Engineering, National Chi Nan University

本表(110)學年度入學新生適用 Effective for students admitted in Fall,2021

最低畢業學分：128學分，全校共同課程 15 學分，通識領域課程 16 學分，系必修 51 學分，選修 34 學分，自由選修 12 學分。Undergraduate requirements: a minimum of 128 required credits, including 15 credits in the school-wide curriculum, 16 credits of General Education courses, 51 credits of Departmental required courses and 34 credits of elective courses and 12 credits of school elective courses.

壹、全校共同課程 1.School-Wide Curriculum

| A. School-Wide Required Courses (12 credits) | | | | |
|--|---|----------------|---|---|
| 課程代號 Course Code | 課程名稱(中文及英文) Name (Chinese and English) | 學分數 Credits | 備 | 註 Notes |
| | 英文一(上) English I(1) | 2 | | |
| | 英文一(下) English I(2) | 2 | | |
| | 英文二 English II | 2 | | 自110學年度起，英文能力分班改為依照本校自辦英檢(OOPT)作依據，分為三級上課：前10%的同學將分配至「進階班英文」上課；中間80%的同學將分配至原班英文上課；後10%的同學將分配至「基礎班英文」上課。Since the first semester of 110 Academic Year (September 2021), the competence-based class grouping policy of Freshmen English (Course Title: English I) will be based on registered student's OOPT scores; Students will be accordingly divided into three different levels: Advanced English (top 10%), General English (middle 80%) and Basic English (bottom 10%). |
| | 國文(上) Chinese(1) | 2 | | 僑外生得以修習「僑外生華語文」抵免國文。(Overseas students take Chinese for Overseas Students) |
| | 國文(下) Chinese(2) | 2 | | |
| | 社會服務學習(上) Service Learning(1) | 1 | | 依所屬學系分班上課，無特殊原因不得跨班選課。(Students are divided into groups by their own department, without any proper reasons they cannot change the decision.) |
| | 社會服務學習(下) Service Learning(2) | 1 | | |
| | 大一體育(上) Physical Education (1) | 0.5 | | |
| | 大一體育(下) Physical Education (2) | 0.5 | | 上學期依所屬學系分班上課，無特殊原因不得跨班選課，惟未達40人之學系、院學士班班級，則採合併班開課；下學期則依運動項目分班，自由選課。(In the first semester of freshman, students are arranged to take Physical Education (1) by their original department. Without any proper reasons, change will be prohibited. If a class of the department or the interdisciplinary program that is less than 40 students, the combined class will be adopted. In the second semester of freshman, students are able to take Physical Education (2) by their interesting.) |
| | 特色運動 (Featured Sports) | 2 | | 大二開始，每學期限修一項，畢業前須完成至少2項特色運動 (Students are limited to take 1 featured sports course each semester since sophomore. At least 2 featured sports courses are required before graduation.) |
| | 通識講座 General Education Seminar | 0 | | 畢業前至少應出席6場。(Students are required to attend at least 6 lectures before graduation.) |
| 選修加列課程) B. School-Wide Elective Courses | | | | |
| | 第二外語 (Second Foreign Language) | | | 含日文、韓文、法文、德文及西班牙文等。(Including Japanese, Korean, French, German and Spanish, etc.) |
| | 東南亞語言(Southeast Asia Languages) | | | 含泰語、越南語、緬甸語、印尼語及馬來語，可抵特色通識「東南亞」次領域。(Including Thai, Vietnamese, Burmese, Indonesian and Malay. These courses can be credited course credits in Southeast Asia of Topical General Education) |
| | 進階語文(Advanced English) | | | |
| | 其他選修(Other Elective Course) | | | |
| 貳、通識領域課程(至少16學分) 2.General Education Courses | | | | |
| 主領域 Main Field | 次領域 Sub-Field | 學分數 Credits | 備 | 註 Notes |
| 人文領域 Humanities | 文學與藝術(Literature and Art) | 4 | | 每次領域各1門，共至少修習4學分。(Students in the two sub-fields should attend at least one course, and attend a total of at least 4 credits) |
| | 歷史哲學與文化(History, Philosophy and Culture) | | | |
| 社會領域 Society | 法政與教育(Law, Politics and Education) | 4 | | 每次領域各1門，共至少修習4學分。(Students in the two sub-fields should attend at least one course, and attend a total of at least 4 credits) |
| | 社經與管理(Society, Economy and Management) | | | |
| 自然領域 Nature | 工程與科技(Engineering and Technology) | 4 | | 每次領域各1門，共至少修習4學分。(Students in the two sub-fields should attend at least one course, and attend a total of at least 4 credits) |
| | 生命與科學(Life and Science) | | | |
| 特色通識領域 Topical General Education | 東南亞(Southeast Asia) | 4 | | 自由選擇其中兩個次領域各修習一門，共至少修習4學分。(Students should select two sub-fields courses in the main field, and attend a total of at least 4 credits) |
| | 綠概念(Green Concept) | | | |
| | 在地實踐(Social Practice) | | | |

參、學系專業課程 3.Departmental Courses

| 課程代號 Course Code | 課程名稱(中文及英文) Course Name (Chinese and English) | 學分數 Credits | 修別 Course type (required/elective) | 開課年級 Course availability (freshman/sophomore /junior/senior) | 備註 Notes |
|---------------------|--|----------------|--|---|--|
| 一、基本必修課程 | | | | | |
| 280002 | 微積分 (一) Calculus (I) | 3 | 必 (R) | 一上 (Freshman 1st Semester) | |
| 280003 | 普通物理 (一) General Physics (I) | 3 | 必 (R) | 一上 (Freshman 1st Semester) | |
| 280004 | 普通化學 (一) General Chemistry(I) | 3 | 必 (R) | 一上 (Freshman 1st Semester) | |
| 280056 | 光電科技導論 Introduction to Optoelectronic Science | 3 | 必 (R) | 一上 (Freshman 1st Semester) | |
| 280009 | 微積分 (二) Calculus (II) | 3 | 必 (R) | 一下 (Freshman 2nd Semester) | |
| 280010 | 普通物理 (二) General Physics (II) | 3 | 必 (R) | 一下 (Freshman 2nd Semester) | |
| 280011 | 普通化學 (二) General Chemistry(II) | 3 | 必 (R) | 一下 (Freshman 2nd Semester) | |
| 280079 | 電路學 Circuits | 3 | 必 (R) | 一下 (Freshman 2nd Semester) | |
| 280055 | 材料科學導論 Introduction to Materials Science | 3 | 必 (R) | 一下 (Freshman 2nd Semester) | |
| 280016 | 工程數學 (一) Engineering Mathematics(I) | 3 | 必 (R) | 二上 (Sophomore 1st Semester) | 先修課程：280002微積分 (一) Prerequisite courses : 280002 Calculus (I) |
| 280017 | 電磁學 (一) Electromagnetics(I) | 3 | 必 (R) | 二上 (Sophomore 1st Semester) | |
| 280015 | 電子學 (一) Electronics(I) | 3 | 必 (R) | 二下 (Sophomore 2nd Semester) | |
| 280063 | 材料分析 Materials Analysis | 3 | 必 (R) | 二下 (Sophomore 2nd Semester) | |
| 280095 | 光學 Optics | 3 | 必 (R) | 三上 (Junior 1st Semester) | |
| 280027 | 近代物理 Modern Physics | 3 | 必 (R) | 三上 (Junior 1st Semester) | |
| 280057 | 專題 (一) Research Project(I) | 1 | 必 (R) | 三上 (Junior 1st Semester) | |
| 280101 | 材料實驗 Materials Experiments | 2 | 必 (R) | 三上 (Junior 1st Semester) | |
| 280058 | 專題 (二) Research Project(II) | 1 | 必 (R) | 三下 (Junior 2nd Semester) | |

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| 280102 | 光電工程實驗 Optoelectronic Engineering Lab. | 2 | 必 (R) | 三下 (Junior 2nd Semester) | |
| 二、一般專業選修課程 | | | | | |
| 280044 | 計算機概論 Basic Computer Concept | 3 | 選 (E) | — (freshman) | |
| 280064 | 普通物理實驗 General Physics Lab. | 1 | 選 (E) | — (freshman) | |
| 280076 | 程式語言設計 Programming Design | 3 | 選 (E) | — (freshman) | |
| 280103 | 程式設計實務應用 Programming Practical | 3 | 選 (E) | — (freshman) | |
| 280105 | 應用材料及光電工程導論 Overview of Applied Materials and Optoelectronic Engineering | 1 | 選 (E) | — (freshman) | |
| 280106 | 線性代數 Linear Algebra | 3 | 選 (E) | — (freshman) | |
| 280107 | 數位科技與光電應用 Digital technology and optoelectronic applications | 3 | 選 (E) | — (freshman) | |
| 280113 | 基礎LabVIEW程式設計 Fundamental LabVIEW Programming Design | 3 | 選 (E) | 二 (sophomore) | |
| 280013 | 材料工程與應用 Application of Materials Engineering | 3 | 選 (E) | 二 (sophomore) | |
| 280019 | 有機化學 Organic Chemistry | 3 | 選 (E) | 二 (sophomore) | |
| 280020 | 奈米科技導論 Introduction to Nano-technology | 3 | 選 (E) | 二 (sophomore) | |
| 280021 | 科技英文 English for Science and Technology | 3 | 選 (E) | 二 (sophomore) | |
| 280023 | 工程數學（二） Engineering Mathematics(II) | 3 | 選 (E) | 二 (sophomore) | 先修課程：280016工程數學（一） Prerequisite courses：280016 Engineering Mathematics(I) |
| 280024 | 電磁學（二） Electromagnetics(II) | 3 | 選 (E) | 二 (sophomore) | |
| 280032 | 有機反應合成與機制 Organic Reactions and Mechanisms | 3 | 選 (E) | 二 (sophomore) | |
| 280077 | 進階電子電路實驗 Advanced Microelectronic Circuit Lab. | 1 | 選 (E) | 二 (sophomore) | |
| 280080 | 材料熱力學 Thermodynamics of Materials | 3 | 選 (E) | 二 (sophomore) | |
| 280081 | 光電材料理論 Fundamentals of electrical and optical materials | 3 | 選 (E) | 二 (sophomore) | |
| 280082 | 科技英文 English for Science and Technology | 2 | 選 (E) | 二 (sophomore) | |
| 280085 | 進階電路學 Advanced Electric Circuits | 3 | 選 (E) | 二 (sophomore) | |
| 280087 | 力學 Mechanics | 4 | 選 (E) | 二 (sophomore) | |
| 280088 | 物理實驗 Physics Lab. | 4 | 選 (E) | 二 (sophomore) | |
| 280091 | 物理發展史 History of Physics | 3 | 選 (E) | 二 (sophomore) | |
| 280094 | 奈米材料 Nano materials | 3 | 選 (E) | 二 (sophomore) | |
| 280098 | 電子電路實驗 Microelectronic Circuit Lab. | 2 | 選 (E) | 二 (sophomore) | |
| 280114 | 當代奈米科技與光電產業簡介 Introduction of Contemporary Nano-technology and Optoelectronic Industry | 3 | 選 (E) | 二 (sophomore) | |

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|--------|--|---|----------|------------------|--|
| 280115 | 有機化學(一) Organic Chemistry (I) | 3 | 選 (E) | 二 (sophomore) | |
| 280115 | 有機化學(二) Organic Chemistry (II) | 3 | 選 (E) | 二 (sophomore) | |
| 280022 | 電子學(二) Electronics(II) | 3 | 選 (E) | 三 (junior) | |
| 280033 | 奈米製作技術 Nano Fabrication Techniques | 3 | 選 (E) | 三 (junior) | |
| 280034 | 材料微結構分析 Microstructural Analysis of Materials | 3 | 選 (E) | 三 (junior) | |
| 280037 | 高分子化學 Chemistry of Polymers | 3 | 選 (E) | 三 (junior) | |
| 280040 | 奈米製作實驗 Nano Manufacturing Lab. | 1 | 選 (E) | 三 (junior) | |
| 280042 | 平面顯示器概論 Introduction to Flat Panel Displays | 3 | 選 (E) | 三 (junior) | |
| 280043 | 光纖元件原理與應用 Optical Fiber Devices - Principles and Applications | 3 | 選 (E) | 三 (junior) | |
| 280037 | 高分子化學 Chemistry of Polymers | 3 | 選 (E) | 三 (junior) | |
| 280038 | 有機材料實驗 Organic Materials Lab. | 1 | 選 (E) | 三 (junior) | |
| 280040 | 奈米製作實驗 Nano Manufacturing Lab. | 1 | 選 (E) | 三 (junior) | |
| 280041 | 晶體結構與繞射 Crystal Structure and Diffraction | 3 | 選 (E) | 三 (junior) | |
| 280042 | 平面顯示器概論 Introduction to Flat Panel Displays | 3 | 選 (E) | 三 (junior) | |
| 280043 | 光纖元件原理與應用 Optical Fiber Devices - Principles and Applications | 3 | 選 (E) | 三 (junior) | |
| 280048 | 高分子材料 Polymer Materials | 3 | 選 (E) | 三 (junior) | |
| 280049 | 奈米光電材料與元件 Nano Optoelectronic Materials and Devices | 3 | 選 (E) | 三 (junior) | |
| 280052 | 薄膜材料與工程 Thin Film Materials and Engineering | 3 | 選 (E) | 三 (junior) | |
| 280053 | 量子力學導論 Introduction to Quantum Mecahnics | 3 | 選 (E) | 三 (junior) | |
| 280061 | 電子學(三) Electronics(III) | 3 | 選 (E) | 三 (junior) | |
| 280065 | 雷射原理與應用 Principle and application of laser | 3 | 選 (E) | 三 (junior) | |
| 280067 | 原子力顯微鏡 Atomic Force Microscopy | 3 | 選 (E) | 三 (junior) | |
| 280068 | 積體電路製程技術 Semiconductor Manufaturing technology | 3 | 選 (E) | 三 (junior) | |
| 280070 | 進階光學 Advanced Optics | 3 | 選 (E) | 三 (junior) | |
| 280073 | 半導體元件物理導論 Fundamentals of Semiconductor Physics and Devices | 3 | 選 (E) | 三 (junior) | |
| 280074 | 表面科學 Surface Science | 3 | 選 (E) | 三 (junior) | |
| 280078 | 光電材料 Electrical and optical properties of materials | 3 | 選 (E) | 三 (junior) | |
| 280086 | 熱物理學 Thermal Physics | 3 | 選 (E) | 三 (junior) | |
| 280089 | 電子材料 Electronic Materials | 3 | 選 (E) | 三 (junior) | |
| 280090 | 近代物理學 Modern Physics | 4 | 選 (E) | 三 (junior) | |
| 280092 | 光柵基礎與實務 Gratings fundamentals and practices | 3 | 選 (E) | 三 (junior) | |

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| 280093 | 碳奈米管材料與元件 Carbon Nanotubes - Materials and Devices | 3 | 選 (E) | 三 (junior) | |
| 280096 | 材料光學 Optical properties of materials | 3 | 選 (E) | 三 (junior) | |
| 280108 | 半導體元件物理導論 Fundamentals of Semiconductor Physics and Devices | 2 | 選 (E) | 三 (junior) | |
| 280117 | 半導體元件物理(一) Semiconductor Physics and Devices (I) | 3 | 選 (E) | 三 (junior) | |
| 280118 | 半導體元件物理(二) Semiconductor Physics and Devices (II) | 3 | 選 (E) | 三 (junior) | |
| 280119 | 光電半導體製程及量測 Optoelectronic Semiconductor Device Fabrication and Characterization Technology | 3 | 選 (E) | 三 (junior) | |
| 280120 | 有機/高分子光電材料與元件 Organic/Polymeric Optoelectronic Materials and Devices | 3 | 選 (E) | 三 (junior) | |
| 280121 | 奈米光學 Nanooptics | 3 | 選 (E) | 三 (junior) | |
| 280122 | 光電模組與系統 Optoelectronic Modules and Systems | 3 | 選 (E) | 三 (junior) | |
| 280123 | 發光二極體 Light Emitting Diode | 3 | 選 (E) | 三 (junior) | |
| 280124 | 有機電激發光材料與顯示技術 Organic Light Emitting Materials and Display Technology | 3 | 選 (E) | 三 (junior) | |
| 280125 | 電池材料 Battery Materials | 3 | 選 (E) | 三 (junior) | |
| 280126 | 材料檢測與製程 Material characterizations and fabrications | 3 | 選 (E) | 三 (junior) | |
| 280127 | 生物醫學材料 Biomedical Materials | 3 | 選 (E) | 三 (junior) | |
| 280128 | 電子陶瓷 Electronic Ceramics | 3 | 選 (E) | 三 (junior) | |
| 280129 | 光電元件 Optoelectronic Devices | 3 | 選 (E) | 三 (junior) | |
| 280130 | 光電與資訊科技 Optoelectronics and Information Technology | 3 | 選 (E) | 三 (junior) | |
| 280131 | 生醫光電 Biophotonics | 3 | 選 (E) | 三 (junior) | |
| 280132 | 太陽能電池導論 Introduction to Solar Cells | 3 | 選 (E) | 三 (junior) | |
| 280133 | 光電感測器及前置電路設計 Optical sensor and front-end readout circuit design | 3 | 選 (E) | 三 (junior) | |
| 280134 | 儲能材料與元件 Energy storage materials and devices | 3 | 選 (E) | 三 (junior) | |
| 280135 | CMOS影像感測器及系統設計 CMOS image sensor and system design | 3 | 選 (E) | 三 (junior) | |
| 280136 | 新世代能源材料 Next-Generation Energy Materials | 3 | 選 (E) | 三 (junior) | |
| 280137 | 科技英文概論 Introduction to scientific/technical English | 1 | 選 (E) | 三 (junior) | |
| 280138 | 高頻元件及電路分析 High frequency device and circuit analysis | 3 | 選 (E) | 三 (junior) | |
| 280151 | 磊晶工程 Epitaxy Engineering | 3 | 選 (E) | 三 (junior) | |
| 280152 | 液流電池與能源存取 Flow Batteries and Energy Storage | 3 | 選 (E) | 三 (junior) | |

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| 280069 | 光電子學 Photo Electronics | 3 | 選 (E) | 三 (junior) | |
| 280062 | 固態物理 Solid State Physics | 3 | 選 (E) | 四 (senior) | |
| 280075 | 積體光學 Integrated Optics | 3 | 選 (E) | 四 (senior) | |
| 280084 | 企業實習 Enterprise Internship | 6 | 選 (E) | 四 (senior) | |
| 280097 | 固態電子學 Solid-State Electronics | 3 | 選 (E) | 四 (senior) | |
| 280099 | 專題 (三) Research Project(III) | 1 | 選 (E) | 四 (senior) | |
| 280100 | 專題 (四) Research Project(IV) | 1 | 選 (E) | 四 (senior) | |
| 280104 | 固態電子實驗 Solid State Electronics Lab | 2 | 選 (E) | 四 (senior) | |
| 280139 | 非線性光學原理與材料 Nonlinear optical theory and materials | 3 | 選 (E) | 四 (senior) | |
| 280140 | 固態電子物理 Solid State Electronic Physics | 2 | 選 (E) | 四 (senior) | |
| 280141 | 自動化光電量測 Automatic optoelectronic measurement | 3 | 選 (E) | 四 (senior) | |
| 280142 | 固態電子學(一) Solid State Electronics(I) | 3 | 選 (E) | 四 (senior) | |
| 280143 | 機器學習(一) Machine learning (I) | 3 | 選 (E) | 四 (senior) | |
| 280144 | 儀器控制 Instrument Control | 3 | 選 (E) | 四 (senior) | |
| 280145 | 虛擬儀控程式設計 Programming of Virtual Instruments | 3 | 選 (E) | 四 (senior) | |
| 280146 | 固態電子元件 Solid State Electronic Devices | 3 | 選 (E) | 四 (senior) | |
| 280147 | 資料擷取與感測電路 Data acquisition and sensing circuits | 3 | 選 (E) | 四 (senior) | |
| 280148 | 進階LabVIEW程式設計 Advanced LabVIEW Programming Design | 3 | 選 (E) | 四 (senior) | |
| 280149 | 固態光學元件 Solid State Optical Devices | 3 | 選 (E) | 四 (senior) | |
| 280150 | 半導體製程技術 Semiconductor Processing Technology | 3 | 選 (E) | 四 (senior) | |
| 280153 | 固態電子實驗(二) Solid State Electronics Lab (II) | 3 | 選 (E) | 四 (senior) | |
| 280155 | 固態電子學(二) Solid State Electronics(II) | 3 | 選 (E) | 四 (senior) | |
| 280154 | 機器學習(二) Machine learning (II) | 3 | 選 (E) | 四 (senior) | |

三、其他系所專業選修課程

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|--------|--|---|----------|------------------|--|
| 240035 | 物理化學(一) Physical Chemistry (I) | 3 | 選 (E) | 二 (sophomore) | 應化系(Department of applied chemistry) |
| 240038 | 物理化學(二) Physical Chemistry(II) | 3 | 選 (E) | 三 (junior) | 應化系(Department of applied chemistry) |
| 240041 | 儀器分析 Instrumental Analysis | 3 | 選 (E) | 三 (junior) | 應化系(Department of applied chemistry) |
| 220019 | 材料力學 Mechanics of Materials | 3 | 選 (E) | 三 (junior) | 土木系(Department of civil engineering) |
| 220085 | 工程材料 Engineering Materials | 3 | 選 (E) | 三 (junior) | 土木系(Department of civil engineering) |
| 230091 | VLSI導論 Introduction to VLSI | 3 | 選 (E) | 二 (sophomore) | 電機系(Department of Electrical Engineering) |
| 520017 | 半導體構裝材料與製程 Semiconductor Packaging Materials and Processes. | 3 | 選 (E) | 三 (junior) | 科院學士班(Bachelor program of college of science and technology) |
| 240108 | 電化學 Electroanalytical Chemistry | 3 | 選 (E) | 三 (junior) | 應化系(Department of applied chemistry) |
| 230257 | 類比VLSI電路設計 Analog VLSI Circuits Design | 3 | 選 (E) | 三 (junior) | 電機系(Department of Electrical Engineering) |
| 230259 | 類比積體電路系統設計及應用 Analog VLSI System Design Applications | 3 | 選 (E) | 三 (junior) | 電機系(Department of Electrical Engineering) |
| 230255 | 積體電路製程技術(一) Integrated Circuits Fabrication technology (I) | 3 | 選 (E) | 三 (junior) | 電機系(Department of Electrical Engineering) |
| 230256 | 積體電路製程技術(二) Integrated Circuits Fabrication Technology (II) | 3 | 選 (E) | 三 (junior) | 電機系(Department of Electrical Engineering) |
| 230282 | 無線通訊系統 Wireless Communication Systems | 3 | 選 (E) | 三 (junior) | 電機系(Department of Electrical Engineering) |
| 230247 | 半導體感測器 Semicondctor Sensors | 3 | 選 (E) | 三 (junior) | 電機系(Department of Electrical Engineering) |
| 230254 | 積體電路元件 Semiconductor Devices forIntegrated Circuits | 3 | 選 (E) | 三 (junior) | 電機系(Department of Electrical Engineering) |
| 230263 | 太陽能電池 Solar Cells | 3 | 選 (E) | 三 (junior) | 電機系(Department of Electrical Engineering) |
| 230272 | 醫學電子學 Biomedical Electronics | 3 | 選 (E) | 三 (junior) | 電機系(Department of Electrical Engineering) |
| 230262 | RFID晶片設計 RFID Chip Design | 3 | 選 (E) | 三 (junior) | 電機系(Department of Electrical Engineering) |