**元智大學工程學院化學工程與材料科學學系**

**與大陸地區學校雙聯學制碩士班／博士班 必修科目表**

**（112學年度入學新生適用）**

112.04.19一一一學年度第六次教務會議通過

Passed by the 5th Academic Affairs Meeting, Academic Year 2022, on April 19, 2023

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 學年(Year)  學期Semester)  科目(Course) | | 第一學年  1st Year | | 第二學年  2nd Year | |
| 上學期  Fall Semester | 下學期  Spring Semester | 上學期  Fall Semester | 下學期  Spring Semester |
| 碩士班 | 必修科目  Required Course | 書報討論  Seminar  CH623 (1) | 書報討論  Seminar  CH624 (1) | 書報討論  Seminar  CH623 (1) | 書報討論  Seminar  CH624 (1) |
|  |  |  | 論文(Thesis)  CH606 (6) |
| 學分小計  Total credits | 0 | 0 | 0 | 6 |
| 博士班 | 必修科目(12)  Required Course  (12) |  |  |  | 論文  (Dissertation)  CH901  (12) |
| 學分小計  Total credits | 0 | 0 | 0 | 12 |
| 備 註  Remarks | | 1. 雙聯學制碩士班研究生，除論文6學分及書報討論外，至少應修習本系課程二門(共6學分)。；雙聯學制博士班研究生，除論文12學分外，至少應修習本系課程一門(3學分)。 2. 入學研究生須依本校學術研究倫理教育課程實施要點規定，於入學第一學期結束前完成學術研究倫理教育課程，最遲須於申請學位口試前補修完成，未完成本課程，不得申請學位口試。」 3. 其他未盡事宜，請參閱本系「碩士班修讀辦法」或「博士班修讀辦法」。 | | | |

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**與大陸地區學校雙聯學制碩士班／博士班 選修科目表**

**（112學年度入學新生適用）**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 學年、學期  Year/ Semester  科目Course  選修領域  Options | 第一學年  1st Year | | 第二學年  2nd Year | | |
| 上學期  Fall Semester | 下學期  Spring Semester | 上學期  Fall Semester | 下學期  Spring Semester |
| 核心科目  Core course | 科技英文  Technical Writing  CH502 (3) |  |  |  | |
|  | 科技論文寫作  Methods of Research and Thesis Writing CH570 (3) | 統計實驗設計與應用  Statistical Experimental Design and Application EG501 (3) | 可靠度工程  Reliability Engineering  IE566 (3) | 智慧財產權  Copyright Protection  CH801 (3) | |
| 高等品質管制Advanced Quality Control IE531 (3) |
| 高分子材料領域  Polymer Materials | 高分子化學  Polymer Chemistry  CH509 (3) | 高等儀器分析(二)  Advanced Instrumental Analysis (Ⅱ)  CH526 (3) | 專題討論  Seminars in Science and Engineering  CH517 (3) | 生物高分子特論  Special Topics on Biomacromolecules  CH519 (3) | |
| 實驗設計  Experimental Design  CH511 (3) | 高分子物理  Polymer Physics  CH527 (3) | 平面顯示器材料化學  Chemistry of Materials for Flat Visual Display  CH521 (3) | 表面分析特論  Special Topics on Surface Analysis  CH536 (3) |
| 高等儀器分析  Advanced Instrumental Analysis  CH525 (3) | 質子交換膜燃料電池特論  Special Topics on Proton-exchange-membrane Fuel Cells CH566 (3) | 有機半導體材料特論  Special Topics on Organic Semiconductor Materials CH589 (3) | 材料特性分析Analysis of Materials [properties](http://tw.dictionary.yahoo.com/search?ei=UTF-8&p=property)  CH620 (3) |
| 高分子熱力學Polymer Thermodynamics  CH528 (3) |  |  |  |
| 藥物制放特論  Special Topics on Controlled Drug Release  CH535 (3) |  |  |  |
| 生化工程領域  Biochemical Engineering | 實驗設計  Experimental Design  CH511 (3) | 高等化工熱力學  Advanced Chemical Engineering Thermodynamics  CH514 (3) | 專題討論  Seminars in Science and Engineering  CH517 (3) | 生物高分子特論  Special Topics on Biomacromolecules  CH519 (3) | |
| 高等儀器分析  Advanced Instrumental Analysis  CH525 (3) | 高等儀器分析(二)  Advanced Instrumental Analysis (Ⅱ)  CH526 (3) | 薄膜分離技術  Membrane Separations  Technology  CH520 (3) | 製藥技術工程  Pharmaceutical Engineering  CH579 (3) |
| 藥物制放特論  Special Topics on Controlled Drug Release  CH535 (3) | 分離技術特論  Special Topics on Separations Technology CH534(3) | 環境生物技術  Environmental Biotechnology  CH586 (3) | 細胞訊息路徑  Cellular Signal Transduction  CH610 (3) |
| 生物物理化學  Biophysical Chemistry  CH548 (3) | 生物模擬材料  Biomimetic Materials  CH569 (3) | 再生醫學  Regenerative Medicine  CH609 (3) |  |
| 高等生化工程  Advanced Biochemical Engineering  CH584 (3) | 生物醫學工程Biomedical Engineering  CH599(3) | 計算生物學  Computational Biology  CB537 (3) |  |
| 分子生物學  Molecular Biology CB521(3) | 基因體學與蛋白體學  Genomics and Proteomics  CB530 (3) |  |  |
| 材料科學領域  Materials Science | 實驗設計  Experimental Design  CH511 (3) | 高等儀器分析(二)  Advanced Instrumental Analysis (Ⅱ)  CH526 (3) | 專題討論  Seminars in Science and Engineering  CH517 (3) | 光電材料與應用  Optoelectronic Materials and its Applications  ER505 (3) | |
| 高等儀器分析  Advanced Instrumental Analysis  CH525 (3) | 質子交換膜燃料電池特論  Special Topics on Proton-exchange-membrane Fuel Cells CH566 (3) | 電化學特論  Special Topics on Electrochemical Engineering  CH539(3) | 表面分析特論  Special Topics on Surface Analysis  CH536 (3) |
| 精密陶瓷概論  Introduction to Fine Ceramics  CH530 (3) | 無機奈米材料  Inorganic Nanomaterials  CH568 (3) | 太陽能技術  Solar Energy Technology  CH588 (3) | 光電材料特論  Special Topics on Optoelectronic Materials  CH537 (3) |
| 藥物制放特論  Special Topics on Controlled Drug Release  CH535 (3) | 化學蒸鍍技術  Chemical Vapor Deposition  C H577 (3) | 有機半導體材料特論  Special Topics on Organic Semiconductor Materials CH589 (3) | 觸媒原理與應用  Catalyst Principles and Applications  CH578 (3) |
| 材料物理化學  Physical Chemistry of Materials  CH600 (3) | 物理冶金  Physical Metallurgy  CH617 (3) | 奈米材料製備與觸媒應用  Nanomaterial Preparations and Catalytic Applications  CH607 (3) | 材料特性分析Analysis of Materials [properties](http://tw.dictionary.yahoo.com/search?ei=UTF-8&p=property)  CH620 (3) |
|  | 相變態  Phase Transformations  CH604 (3) | 晶體結構與缺陷  Crystal Structure and Defects CH618 (3) | 結晶學與繞射概論  Elements of Crystallography and Principles of X-Ray Diffraction CH619 (3) | 鋰電池材料與製程技術  Materials and Processing of Lithium Battery  CH701 (3) |
| 光電材料與元件Optoelectronic Materials and Devices CH622 (3) |  | 計算材料學  Calculation in Materials Science CH621 (3) |  |
| 磁性材料概論  Introduction to Magnetic Materials  CH625(3) |  |  |  |
| 程序工程領域  Process Engineering | 高等輸送現象  Advanced Transport Phenomena  CH501 (3) | 應用數值分析  Applied Numerical Analysis  CH507 (3) | 專題討論  Seminars in Science and Engineering  CH517 (3) | 懸浮微粒制技術  Particulate Control Technique  CH564 (3) | |
| 高等化工動力學  Advanced Chemical Engineering Kinetics  CH503 (3) | 高等化工熱力學  Advanced Chemical Engineering Thermodynamics  CH514 (3) | 薄膜分離技術  Membrane Separations Technology  CH520 (3) | 氣膠學  Aerosol Science  CH574 (3) |
| 實驗設計  Experimental Design  CH511 (3) | 高等儀器分析(二)  Advanced Instrumental Analysis (Ⅱ)  CH526 (3) | 分離技術特論  Special Topics on Separations Technology CH534(3) |  |
| 高等儀器分析  Advanced Instrumental Analysis  CH525 (3) | 反應器設計  Reactor Design  CH561 (3) |  |  |
|  | 薄膜程序設計與應用  Design and Applications of Membrane Processes  CH585 (3) |  |  |
| 永續發展領域  Sustainable Development | 高等輸送現象  Advanced Transport Phenomena  CH501 (3) | 應用數值分析  Applied Numerical Analysis  CH507 (3) | 專題討論  Seminars in Science and Engineering  CH517 (3) | 光電材料與應用  Optoelectronic Materials and its Applications  ER505 (3) | |
| 實驗設計  Experimental Design  CH511 (3) | 綠色工程創意設計  Innovative Design for Green Energy  ER509 (3) | 分離技術特論  Special Topics on Separations Technology CH534(3) | 懸浮微粒制技術  Particulate Control Technique  CH564 (3) |
| 環境系統工程  Environmental Systems Engineering  CH518 (3) | 高等儀器分析(二)  Advanced Instrumental Analysis (Ⅱ)  CH526 (3) | 電化學特論  Special Topics on Electrochemical Engineering  CH539 (3) | 質子交換膜燃料電池特論  Special Topics on Proton-exchange-membrane Fuel Cells  CH566 (3) |
| 高等儀器分析  Advanced Instrumental Analysis  CH525 (3) | 質子交換膜燃料電池特論  Special Topics on Proton-exchange-membrane Fuel Cells CH566 (3) | 太陽能技術  Solar Energy Technology  CH588 (3) | 氣膠學  Aerosol Science  CH574 (3) |
| 環境生物技術  Environmental Biotechnology  CH586 (3) | 環工程序化學  Environmental Process Chemistry  CH573 (3) | 有機半導體材料特論  Special Topics on Organic Semiconductor Materials CH589 (3) | 觸媒原理與應用  Catalyst Principles and Applications  CH578 (3) |
| 材料物理化學  Physical Chemistry of Materials  CH600 (3) | 燃料電池  Fuel Cells  CH575 (3) |  | 鋰電池材料與製程技術  Materials and Processing of Lithium Battery  CH701 (3) |
|  | 光電材料與元件Optoelectronic Materials and Devices CH622 (3) |  |  |
| 備註  Remarks |  | | | | |