國立陽明交通大學光電工程學系跨域學程實施要點

National Yang Ming Chiao Tung University
Department of Photonics
Implementation Guidelines for Cross-Disciplinary Program

110 年 10 月 19 日系課程會議通過
110 年 10 月 28 日院課程委員會議通過
110 年 12 月 2 日校級課程委員會議通過
110 年 12 月 16 日教務會議核備通過
111 年 3 月 10 日系課程會議通過
111 年 3 月 24 日院課程委員會議通過
111 年 5 月 13 日校級課程委員會議通過
111 年 6 月 16 日教務會議核備通過
112 年 3 月 14 日系課程會議通過
112 年 4 月 13 日院課程委員會議通過
112 年 5 月 16 日校級課程委員會議通過
112 年 5 月 30 日教務會議核備通過
113 年 3 月 27 日系課程會議通過
113 年 4 月 11 日院課程委員會議通過
113 年 5 月 20 日校級課程委員會議通過

一、 依據國立陽明交通大學跨域學程實施辦法，國立陽明交通大學光電工程學系(以下簡稱本系)為鼓勵學生進行跨領域學習，建立跨域學習深度，協助學生拓展第二專長，提供學生可以在畢業學分不增加(或僅少量增加)情況下，修畢跨域學程，特訂定本要點。

Article One These Implementation Guidelines are prescribed by Yang Ming National Chiao Tung University Department of Photonics (hereinafter referred to as Our Department) based on NYCU Cross-Disciplinary Program Implementation Regulations to provide the opportunity for students to proceed cross-disciplinary learning without increasing graduate credits (or only a few extra credits) in order to encourage students to conduct cross-disciplinary study, build the depth of cross-disciplinary study, and assist students expanding second specialty.

二、 跨域學程係指由陽明交通大學的學系、研究所、或學院提出模組課程，模組課程應包含該領域基礎核心知識，且總學分數以30學分為原則(最低可為28學分，最高不可超過32學分)，學生修習跨域學程，其課程將包含所屬學系的跨域學程模組課程以及第二專長系所或學院的跨域學程模組課程，並可於畢業證書上加註第二專長模組課程為跨域專長。

Article Two The cross-disciplinary program here means the cross-disciplinary module curriculum proposed by the departments, institutes, or colleges in National Yang Ming Chiao Tung University. Module curriculum should include the core knowledge curriculum of the field and the total credits will be based on 30 credits (the minimum 28 credits and no more than 32 credits). The cross-disciplinary program that students take will include the cross-disciplinary program module curriculum of the department they belong to as well as the cross-disciplinary program module curriculum from the second specialty department or college. The module curriculum of the second specialty could be remarked as “Cross-Disciplinary Specialty” on the diploma.

三、 本系設置「光電工程」跨域學程，同時，本系與電子物理學系以及材料工程學系共同設置「三一學程」跨域學程，此兩個跨域學程的修業規定分別規範於第四點。

Article Three Our Department launches two cross-disciplinary programs. One is “Photonics” cross-disciplinary program, and the other is “Three-in-one” cross-disciplinary program formed by Our Department, Department of Electrophysics, and Department of Material Engineering. The guidelines of the two cross-disciplinary programs are given in Article Four.

四、 本要點修業規定

Article Four Implementation objects of these Guidelines

（一）本系學生欲修習跨域學程者

For the student of our department who would like to take cross-disciplinary program

1. 得於每學年度公告申請期限內向本系提出申請，申請時註明欲申請的第二專長系所或學院，申請期限將由本系課程委員會提前一個月進行公告，公告中說明需準備的審查資料以及當年度本系開放給本系學生修讀跨域學程的名額，申請案經本系課程委員會審查通過後，需送到第二專長系所或學院審查，通過雙邊審查後，方可進入跨域學程。

   The application can be submitted to our department by the deadline announced by faculty every year. The department or college of the second specialty that the student would like to apply for must be remarked on the application form, and the application deadline would be announced one month in advance by the Curricular Committee at our department. The evaluation documents need preparing as well as the quota opened to the students in our department to study for this program in the given year will be released on the announcement. The application should be sent to the department or college of the second specialty for evaluation after it is approved by the Curricular Committee at our department. Students could take the cross-disciplinary program after evaluation by both sides.

2. 本系學生修習跨域學程的課程，列示於「光電工程學系跨域學程本系學生必修科目表」，其課程包含：校必修(含共同必修24學分)、本系基礎必修課程、本系跨域模組課程、以及第二專長系所或學院的跨域模組課程(以下簡稱他系跨域模組課程)，畢業學分以128學分為原則。他系跨域模組課程認定為跨域專長，於畢業證書本系名稱後加註此跨域專長。

   The courses of cross-disciplinary program taken by students in our department should be listed on “The Required Course List for the students at our department study cross-disciplinary program in department of Photonics.” The courses include required courses of the university (including 24 credits of general education subjects), core curriculum at our department, cross-disciplinary module curriculum at our department, and the cross-disciplinary module curriculum of the second specialty department or college (hereinafter referred to as cross-disciplinary module curriculum at other department) with at least 128 graduate credits. The cross-disciplinary module curriculum at other department would be recognized as cross-

disciplinary specialty, and it will be remarked after the title of our department on the diploma.

3. 本系學生修習跨域學程，若無法修畢跨域學程課程，得選擇放棄跨域學程，改修習原光電工程學系的學士學位課程。

For students at our department who study for cross-disciplinary program but are not able to complete the program, they shall give up the cross-disciplinary program and take credits of bachelor degree program at their original department, Department of Photonics.

(二)外系學生欲選擇「光電工程」跨域學程做為其跨域專長者

For students of other departments who would like to take “Photonics” cross-disciplinary program as their cross-disciplinary specialty.

1. 得於每學年度公告申請期限內向其所屬學系（以下簡稱原系）提出申請，通過原系以及本系的雙邊審查後，方可進入跨域學程。

They could submit the application to the department that they belong to by the deadline announced announcements by faculty every year, they could take the cross-disciplinary program after approved by both their original department and our department.

2. 外系學生修讀跨域學程且選擇本系做為其跨域專長者，其課程包含：校必修(含共同必修24學分)、原系基礎必修課程、原系跨域模組課程、以及列示於「光電工程學系跨域模組課程必修科目表」的模組課程，畢業學分以128學分為原則，並於畢業證書原系名稱後加註光電工程為其跨域專長。

The courses for the students from other departments who would like to study for cross-disciplinary program and choose our department as their cross-disciplinary specialty include required courses of the university (including 24 credits of general education subjects), core curriculum at their original department, cross-disciplinary module curriculum at their original department, and the module curriculum listed on “The Required Course List for the students study cross-disciplinary module curriculum in department of Photonics” with at least 128 graduate credits. The Photonics will be remarked as their cross-disciplinary specialty after the title of their original department on the diploma.

(三)本系或外系學生欲選擇三一學程做為其跨域專長者

For student who would like to take “Three-in-one” cross-disciplinary program as their cross-disciplinary specialty.

1. 得於每學年度公告申請期限內向其所屬學系（以下簡稱原系）提出申請，通過原系以及三一學程系群的雙邊審查後，方可進入跨域學程。

They could submit the application to the department that they belong to by the deadline announced by faculty every year, they could take the cross-disciplinary program after approved by both their original department and the committee of “Three-in-one” program .

2. 學生修讀跨域學程且選擇本學程做為其跨域專長者，其課程包含：校必修(含共同必修24學分)、原系基礎必修課程、原系跨域模組課程、以及列示於「**三一學程(電子物理系，光電工程學系，材料工程學系） 跨域模組課程必修科目表**」的模組課程，畢業學分以128學分為原則，並於畢業證書原系名稱後加註「三一學程(電子物理/光電/材料)」為其跨域專長。

The courses for the students who would like to study for cross-disciplinary program and choose “Three-in-one” program as their cross-disciplinary specialty include required courses of the university (including 28 credits of general education subjects), core curriculum at their original department, cross-disciplinary module curriculum at their original department, and the module curriculum listed on “The Required Course List for the students study cross-disciplinary module curriculum in “Three-in-one” program-with at least 128 graduate credits. The “Three-in-one (Electrophysics/Photonics/Material)” will be remarked as their cross-disciplinary specialty after the title of their original department on the diploma.

五、 本系指定至少一名專任教師擔任跨域學程導師，與外系所或學院的跨域學程導師組成導師群，專責輔導跨域學程的學生。

Article Five Our department assigned at least one full-time teacher to be the mentor of the cross-disciplinary program and formed mentor group with teachers of cross-disciplinary program at other department or college to give guidance to cross-disciplinary program students.

六、 為鼓勵不同系所或學院合作提出跨域共授課程，兩位以上教師開授跨領域之創新整合式課程，得依本校教師授課時數核計原則規定辦理。

Article Six In order to encourage different departments or colleges working together for the proposal of cross-disciplinary curriculum, the number of teaching hours for the innovating integrated curriculum offered by more than two teachers could be calculated according to National Yang Ming Chiao Tung University Principles for Verifying and Calculating Teachers’ Teaching Hours.

七、 本要點如有未盡事宜，悉依本校學則及其他相關規定辦理。

Article Seven These guidelines were approved by Curricular Committee at university level and then submitted to the Council of Academic Affairs for approval-for-reference before putting it into practice; the same shall be done upon any amendment thereto.

八、 本要點經校級課程委員會通過後實施，修訂時亦同。

Article Eight These guidelines were approved by Curricular Committee at university level before putting it into practice; the same shall be done upon any amendment thereto.

A 表　　光電工程學系跨域學程 必修科目表 (光電系學生適用)

The Required Course List for the students in Department of Photonics who study cross-disciplinary program

類別 Category	科目名稱 Course Name	學分 Credit	開課系所 Department	說明 Remark
本系基礎必修 （40 學分） Core curriculum at our department （40 credits）	微積分(一) Calculus (I)	4	微積分小組 Calculus Teaching Group	
	微積分(二) Calculus (II)	4	微積分小組 Calculus Teaching Group	
	物理(一) Physics (I)	4	普物小組 Physics Teaching Group	
	物理(二) Physics (II)	4	普物小組 Physics Teaching Group	
	物理實驗(一) Physics Labs. (I)	1	光電系 Photonics	
	物理實驗(二) Physics Labs. (II)	1	光電系 Photonics	
	計算機概論 Introduction to Computer & Computer Science	3	光電系 Photonics	
	線性代數 Linear Algebra	3	光電系 Photonics	
	微分方程 Differential Equations	3	光電系 Photonics	
	電子學(一) Electronic (I)	3	光電系 Photonics	
	電子學實驗(一) Electronic Lab. (I)	2	光電系 Photonics	
	電磁學(一) Electromagnetics (I)	3	光電系 Photonics	
	電磁學(二) Electromagnetics (II)	3	光電系 Photonics	
	服務學習(一) Service Learning I	1	光電系 Photonics	
	服務學習(二) Service Learning II	1	光電系 Photonics	
	光電生涯與生活及導師時間(上、下學期) Career Planning and Mentor's Hours	0	光電系 Photonics	
本系跨域模組 （30 學分） Cross-disciplinary modules at our department （30 credits）	**必修：12 學分** Compulsory courses：12 credits			
	光子學(一) Elements of Photonics (I)	3	光電系 Photonics	
	光子學(二) Elements of Photonics (II)	3	光電系 Photonics	
	光子學實驗(一) Photonics Lab. (I)	2	光電系 Photonics	
	光子學實驗(二)	2	光電系	

	Photonics Lab. (II)		Photonics	
	光電跨域專題(一) X-Photonics Project (I)	1	光電系 Photonics	大三修 For the third year of college
	光電跨域專題(二) X-Photonics Project (II)	1	光電系 Photonics	大三修 For the third year of college
	選修(分基礎課程以及專業課程)至少 18 學分，18 學分需至少包含兩門專業課程 (Optional Courses (including Basic Courses and Advanced Courses) at least 18 credits. The 18 credits must include the credits from at least two Advanced Courses)			
	基礎課程(Basic Courses)：			
	複變函數 Complex Variables	3	光電系 Photonics	
	訊號與系統 Signals and Systems	3	光電系 Photonics	
	電路學 Circuit Theory	3	光電系 Photonics	
	電子學(二) Electronic (II)	3	電機學院大學部 College of Electrical Engineering	
	電子學實驗(二) Electronic Lab. (II)	2	電機學院大學部 College of Electrical Engineering	
	化學(一) Chemistry (I)	3	光電系 Photonics	
	化學(二) Chemistry (II)	3	光電系 Photonics	
	半導體元件及物理 Semiconductor Devices & Physics	3	光電系 Photonics	
	專業課程 (Advanced Courses)：			
	近代物理 Modern Physics	3	光電系 Photonics	
	材料光學 Optical Properties of Materials	3	光電系 Photonics	
	富氏光學 Fourier Optics	3	光電系 Photonics	
	矽基液晶光學系統設計與實作 Optical Laboratory Based on Liquid Crystal on Silicon	3	光電系 Photonics	
	光纖通訊 Optical Fiber Communication	3	光電系 Photonics	
	感測器基礎實作與嵌入式系統應用 Solid-State Sensor and Embedded System	3	光電系 Photonics	
	顯示電子電路 Electronic Circuits for Display	3	光電系 Photonics	

	有機電子元件與光電元件 Organic Electronics and Optoelectronics	3	光電系 Photonics	
	電子薄膜物理與製程技術 Electrical Thin Film Physics and Process Technology	3	光電系 Photonics	
	液晶導論 Intro. to Liquid Crystals	3	光電系 Photonics	
	生醫光子學導論 Introduction to Biophotonics	3	光電系 Photonics	
	視覺與生理光學 Visual perception and physiological optics	3	光電系 Photonics	
	神經光子學 Neurophotonics	3	光電系 Photonics	
	光學設計與像差理論 Optical design and aberration theory	3	光電系 Photonics	
	矽光子學 Silicon photonics	3	光電系 Photonics	
	光電生化感測元件 Bio-chemical sensors based on electric and optical devices	3	光電系 Photonics	
	物理光學 Physical Optics	3	光電系 Photonics	
	光電子學 Opticalelectronics	3	光電系 Photonics	
	主動矩陣式顯示器及感測器 Active matrix displays and sensors	3	光電系 Photonics	
	晶體光學 Optical waves in crystals	3	光電系 Photonics	
	奈米光電元件技術 Nano-Photonics Technology	3	光電系 Photonics	
	光電物理中的數值方法導論 Introduction to Numerical Methods in Optical Physics	3	光電系 Photonics	
	色彩工程學 Color Engineering	3	光電系 Photonics	
	幾何光學 Geometrical Optics	3	光電系 Photonics	
	固態物理 Solid State Physics	3	光電系 Photonics	
	超穎介面 Metasurfaces	3	光電系 Photonics	
	繞射光學 Diffractive Optics	3	光電系 Photonics	
	量子光學導論 Intro.to Quantum Optics	3	光電系 Photonics	
	雷射原理與超快光學 Laser principles and ultrafast optics	3	光電系 Photonics	

	光學系統導論 Introduction to Optical Systems	3	光電系 Photonics	
	臨床光學影像技術 Advanced Clinical Optical Imaging Technology	3	光電系 Photonics	
	光學微影與解析度增益技術 Optical Micro-lithography (OML) and Resolution Enhancement Techniques	3	光電系 Photonics	
	新穎半導體電晶體與感測器 New Semiconductor Transistors and Sensors	3	光電系 Photonics	
	現代光譜技術 Modern Methods of Optical Spectroscopy	3	光電系 Photonics	
	最佳化理論與反向設計 Optimization Theory and Inverse Design	3	光電系 Photonics	
	電控液晶光電元件 Electrically tunable liquid crystal photonic devices	3	光電系 Photonics	
	半導體雷射二極體 Semiconductor Laser Diodes	3	光電系 Photonics	
他系跨域模組 (依他系學分數規定，28-32 學分) Cross-disciplinary modules at other department （28-32 credits）			本校各系所或學院所提供之跨域模組學程，擇一修畢 The cross-disciplinary modules offer by departments or colleges at our university; choose one to complete.	
最低畢業學分 Minimum Graduate Credits		128		

註：本校共同必修科目表規定，外語課程必修至少 6 學分。如大學部學生修習共同必修學分數超過 24 學分以上，本校至多可採至 40 學分於最低畢業學分內，但各學系另有規定者，從其規定。

Note: According to the rules prescribed by Table of General Education Subject of our university, at least 6 credits of foreign language courses must be taken. For the students in the bachelor degree program who study general education subjects more than 24 credits, 40 credits most can be included in the minimum graduate credits of our university; please follow the regulations from each department if it is specially defined.

B 表　　光電工程學系　跨域模組課程 必修科目表 (非光電系學生適用)

The Required Course List for the students in other departments who study cross-disciplinary program and choose "Photonics" as their cross-disciplinary specialty

類別 Category	科目名稱 Course Name	學分 Credit	開課系所 Department	備註 Remark
光電系跨域模組（30 學分） Cross-disciplinary modules in department of Photonics（30 credits）	**必修：12 學分**　Compulsory courses：12 credits			
	光子學(一) Elements of Photonics (I)	3	光電系 DEO1010	
	光子學(二) Elements of Photonics (II)	3	光電系 DEO1014	
	光子學實驗(一) Photonics Lab. (I)	2	光電系 DEO1023	
	光子學實驗(二) Photonics Lab. (II)	2	光電系 DEO1025	
修畢於畢業證書加註「跨域專長：光電工程」 It could be remarked as "Cross-Disciplinary Specialty: Photonics" on the diploma after the module curriculum is completed.	光電跨域專題(一) X-Photonics Project (I)	1	光電系 DEO1612	大三修 For the third year of college
	光電跨域專題(二) X-Photonics Project (II)	1	光電系 DEO2207	大三修 For the third year of college
	選修：至少 18 學分 Optional Courses:18 credits			
	感測器基礎實作與嵌入式系統應用 Solid-State Sensor and Embedded System	3	電機、資訊、理、工學院 All departments in the College of Electrical and Computer Engineering, the College of Computer Science, the College of Science, and the College of Engineering	外系抵免學分以 12 學分為上限 The waived credits should be lower than (including) 12 credits
	電路學 Circuit Theory	3		
	線性代數 Linear Algebra	3		
	微分方程 Differential Equations	3		
	複變函數 Complex Variables	3		
	訊號與系統 Signals and Systems	3		
	近代物理 Modern Physics	3		
	材料光學 Optical Properties of Materials	3		
	半導體元件及物理 Semiconductor Devices & Physics	3		
	計算機概論 Introduction to Computer & Computer Science	3		
	電子學(一) Electronic (I)	3		
	電子學(二) Electronic (II)	3		
	電子學實驗(一) Electronic Lab. (I)	2		

	電子學實驗(二) Electronic Lab. (II)	2		
	電磁學(一) Electromagnetics (I)	3		
	電磁學(二) Electromagnetics (II)	3		
	化學(一) Chemistry (I)	3		
	化學(二) Chemistry (II)	3		
	富氏光學 Fourier Optics	3		
	矽基液晶光學系統設計與實作 Optical Laboratory Based on Liquid Crystal on Silicon	3		
	光纖通訊 Optical Fiber Communication	3		
	顯示電子電路 Electronic Circuits for Display	3		
	有機電子元件與光電元件 Organic Electronics and Optoelectronics	3		
	電子薄膜物理與製程技術 Electrical Thin Film Physics and Process Technology	3		
	液晶導論 Intro. to Liquid Crystals	3		
	生醫光子學導論 Introduction to Biophotonics	3		
	視覺與生理光學 Visual perception and physiological optics	3		
	神經光子學 Neurophotonics	3		
	光學設計與像差理論 Optical design and aberration theory	3		
	矽光子學 Silicon photonics	3		
	光電生化感測元件 Bio-chemical sensors based on electric and optical devices	3		
	物理光學 Physical Optics	3		
	光電子學 Opticalelectronics	3		
	主動矩陣式顯示器及感測器 Active matrix displays and sensors	3		
	晶體光學 Optical waves in crystals	3		
	奈米光電元件技術	3		

	Nano-Photonics Technology			
	光電物理中的數值方法導論 Introduction to Numerical Methods in Optical Physics	3		
	色彩工程學 Color Engineering	3		
	幾何光學 Geometrical Optics	3		
	固態物理 Solid State Physics	3		
	超穎介面 Metasurfaces	3		
	繞射光學 Diffractive Optics	3		
	量子光學導論 Intro.to Quantum Optics	3		
	雷射原理與超快光學 Laser principles and ultrafast optics	3		
	光學系統導論 Introduction to Optical Systems	3		
	臨床光學影像技術 Advanced Clinical Optical Imaging Technology	3		
	光學微影與解析度增益技術 Optical Micro-lithography (OML) and Resolution Enhancement Techniques	3		
	新穎半導體電晶體與感測器 New Semiconductor Transistors and Sensors	3		
	現代光譜技術 Modern Methods of Optical Spectroscopy	3		
	最佳化理論與反向設計 Optimization Theory and Inverse Design	3		
	電控液晶光電元件 Electrically tunable liquid crystal photonic devices	3		
	半導體雷射二極體 Semiconductor Laser Diodes	3		
總學分 Total		30		

C 表　　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

類別 Category	科目名稱 Course Name	學分 Credit	開課系所 Department	備註 Remark
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 (Electrophysics/Photonics/Material)" 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** 近代物理(一) Modern Physics (I) 量子力學導論 Int. to Quantum Mechanics 計算物理 Computational Physics	3 3 3	電物 Electrophysics 電物 Electrophysics 電物 Electrophysics	
	模組二：半導體及量子科技 **Module 2: Semiconductor and Quantum technology** 近代物理(一) Modern Physics (I) 半導體物理及元件 [1] Semiconductor Physics and Devices[1] 固態物理(一) Solid State Physics (I) 電子實驗 Electronics Labs.	3 3 3 2	電物 Electrophysics 電物 Electrophysics 電物 Electrophysics 電物 Electrophysics	[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 [1]To avoid repetition, please only choose one of the following two courses: [Semiconductor Physics and Devices] (Electrophysics) and [Semiconductor Devices and Physics] (Photonics)
	模組三：雷射與光電科技 Module 3:Laser and Optoelectronics technology 電磁學(一) Electromagnetics (I) 光學概論(一) Introduction to Optics (I) 雷射導論 Introduction to Laser 實驗物理 Experimental Physics	3 3 3 2	電物 Electrophysics 電物 Electrophysics 電物 Electrophysics 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 Physics 材料光學 Optical Properties of Materials 智慧光源科技與半導體實作 [3] Introduction to semiconductor experiments on smart photon sources	3 3 3 3	光電 Photonics 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 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[1] 顯示電子電路 Electronic Circuits for Display 新穎半導體電晶體與感測器 New Semiconductor Transistors and Sensors	 3 3 3	 光電 Photonics 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 repetition, please only choose one of the following two courses: [Semiconductor Physics and Devices] (Electrophysics) and [Semiconductor Devices and Physics] (Photonics)
	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) 晶體結構與繞射導論 Introduction to Crystallography and Diffraction 材料微觀結構分析 Microstructural Characterization of Materials	 3 3 3	 材料 Material 材料 Material 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) 材料基礎實驗(一) Elementary Materials Labs. (I) 材料基礎實驗(二) Elementary Materials Labs. (II) 半導體製程 Semiconductor Processing	 2 2 2 3	 材料 Material 材料 Material 材料 Material 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 材料物理性質 Physical Properties of Materials 電子材料 Electronic Materials	 3 3 3	 材料 Material 材料 Material 材料 Material	
	模組十：生醫工程			

	Module 10: Biomedical Engineering 智慧生醫概論 Introduction of Smart Biomedicine 生醫光子學導論 Introduction to Biophotonics 奈米生醫材料簡介 Introduction to Nano-Biomaterials	 3 3 3	 電物 Electrophysics 光電 Photonics 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 is completed after acquiring total 28 credits and satisfying the two conditions above.