

# 國立交通大學資訊工程學系「電子工程跨域學程」實施要點

107 學年度(2017/2018 Academic Year)

National Chiao Tung University

Department of Computer Science

## Implementation Guidelines for Cross-Disciplinary Program in Electronics

### Engineering Department

資訊工程學系 104 學年度第 10 次課程委員會修訂(105 年 04 月 07 日)

資訊學院 104 學年度第 3 次教學與課程委員會修訂(105 年 05 月 05 日)

104 學年度第 5 次教務會議核備(105 年 06 月 08 日)

資訊工程學系 105 學年度第 8 次課程委員會修訂(106 年 04 月 20 日)

資訊學院 105 學年度第 3 次教學與課程委員會修訂(106 年 04 月 24 日)

105 學年度第 4 次教務會議核備(106 年 06 月 08 日)

資訊工程學系 106 學年度第 7 次課程委員會修訂(107 年 03 月 21 日)

資訊學院 106 學年度第 3 次教學與課程委員會修訂(107 年 05 月 21 日)

106 學年度第 4 次教務會議核備(107 年 06 月 21 日)

- 一、依據國立交通大學跨域學程實施辦法，國立交通大學資訊工程學系(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，特訂定本實施要點。

These Implementation Guidelines are prescribed by National Chiao Tung University Department of Computer Science (hereinafter referred to as Our Department) based on NCTU 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 to expand second specialty.

- 二、依據國立交通大學跨域學程實施辦法，本系學生修習「電子工程跨域學程」(以下簡稱本學程)，於修畢後可於畢業證書上加註「電子工程」為跨域專長。

According to NCTU Implementation Guidelines for Cross-Disciplinary Program, students in CS department could be remarked as “Cross-Disciplinary Specialty” on the diploma once they complete this program.

### 三、本辦法實施細節

1. 適用對象：本校104學年度(含)之後入學之學士班學生均適用本要點。
2. 申請程序：

(1) 本系學生欲修習本學程者得於每學年下學期向本系提出申請，經本系及電子工程學系課程委員會審查通過後，並得優先修習本學程課程。

(2) 本學程的課程列示於『資訊工程學系「電子工程跨域學程」必修科目表』，其課程包含：校必修(含共同必修28學分)，本系基礎必修課程(以資電組**60**

學分為準)，以及電子工程學系的跨域模組課程(30學分)，畢業學分至少128學分。

- (3) 修習本學程之學生，若無法完成 (2)中所規定之課程，可回復修習原資訊工程學系的學士學位課程。
- (4) 除必修科目表備註可以抵免之科目外，其餘抵免皆需遞送免修申請表。
- (5) 跨域模組課程與學生本系應修課程及學分重複者，由電子系指定之相關選修課程補足。

#### Guidelines in detail

- 1) People applicable to this program: undergraduate students who are or after class of 2019
- 2) Procedure to apply for this program:
  - (I) The application could be submitted to our department during the second semester of the first year or the second semester of the second year. The application should be sent to the Curricular Committee at our department and the EE department. Students could only take the cross-disciplinary program after evaluation by both sides.
  - (II) Courses included in this program are listed on “The Required Course List for the students at our department study cross-disciplinary program in department of Electricals Engineering”. Courses are classified as:  
Required courses of the university: 28 credits  
Core curriculum at CS department: take CS + EE Program **60** credits as criterion  
Cross-disciplinary program module courses at EE department: 30 credits  
At least 128 credits are required for graduation
  - (III) 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 transfer to study for the bachelor degree program at the original department of Computer Science.

四、本系指定一名專任教師擔任跨域學程導師，與電子工程學系的跨域學程導師組成導師群，專責輔導跨域學程的學生。

Our department assigned 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.

五、本要點如遇修訂，須主動知會電子工程學系。

CS department should notify EE department if the guidelines need to be revised.

六、本要點如有未盡事宜，悉依本校學則及其他相關規定辦理。

If there is any unaccomplished matter of these guidelines, it shall be handled in accordance

with the school constitution of our university as well as other relevant regulations.

七、本要點經校級課程委員會通過並提教務會議核備後實施，修訂時亦同。

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.

資訊工程學系「電子工程跨域學程」必修科目表  
**Courses for CS Department**  
**Cross-disciplinary Program in EE Department**

類別 Category	選別 Classification	科目名稱 Courses	學分 Credits		開課 系所 Dept.	備註 Remarks	
			上學期 Fall Semester	下學期 Spring Semester			
本系基礎必修 ( <u>60</u> 學分) Core curriculum at our department ( <u>60</u> credits)		物理(一)(二) Physics (I)(II)	3	3	本校 NCTU	三選一 Pick 1 out of 3	
		普通生物(一)(二) General Biology (I)(II)					
		化學(一)(二) Chemistry (I)(II)					
			微積分(一)(二) Calculus(I)(II)	4	4		
			線性代數 Linear Algebra	3		資工系 CS	
			計算機概論與程式設計 Intro. to Computers and Programming	3			
			資料結構與物件導向程式設計 Data Structures and Object- oriented Programming		3		
			離散數學 Discrete Mathematics		3		
			數位電路設計 Digital Circuit Design		3		
			數位電路實驗 Digital Circuit Lab.	<u>3</u>			
			演算法概論 Intro. to Algorithms	3			
			作業系統概論 Intro. to Operating Systems	3			
			計算機組織 Computer Organization		3		
			資訊工程專題(一)(二) Computer Science and Engineering Projects(I)(II)	2	2		可以「跨領域 專題 (一)(二)」 申請免修
			微處理機系統實驗 Microprocessor System Lab.	<u>3</u>			
			電路與電子學(一) Electrical Circuits and	3			

		Electronics I				
		編譯器設計概論 Intro. to Compiler Design	3			
		訊號與系統 Signals and Systems		3		
		嵌入式系統設計概論與實作 Introduction to Embedded Systems Design and Implementation		3		
		導師時間 Mentor's Hours	0	0		
		服務學習 (一) Service Learning I		0		
		服務學習 (二) Service Learning II	0			
		資訊工程研討 Computer Science Seminars	0			
		基礎程式設計 Basic Programming		0		本課程及格 條件為通過 『程式能力 鑑定』 Pass=Passing Basic Computer Programming Exam
<p>電子系跨域模 組 (30 學 分) 修畢於畢業證 書加註『跨域 專長：電子工 程』 Cross- disciplinary modules at other department (30 credits)</p> <p>Could be remarked as “Cross- Disciplinary Specialty” on the diploma</p>	<p>必修 Compuls ory Courses</p>	邏輯設計 Logic Design	3		電子系 EE	可以抵免之 資工系課程 「數位電路 設計」 Can be waived by “Digital Circuit Design” offered by CS Dept.
		跨領域專題 (一)(二) Cross-disciplinary Project (I)(II)	2	2	電子系 /資工 系 EE/CS	<u>需資訊工程 學系和電子 工程學系教 授共同指導</u>
		電子學 (一) Electronics(I)	3		電子系 EE	
		電子學 (二) Electronics(II)		3	電子系 EE	
		電子實驗 (一) Electronics Lab.(I)	2		電子系 EE	
		機率、微分方程、複變函數 (三選一)		3	電子系 EE	可以抵免之 資工系課程 「機率、微

		Probability, Differential Equations, Complex Variable (Pick 1 out of 3)			分方程」 Can be waived by “Probability”, “Differential Equations” offered by CS Dept.
	選修 Elective Courses	電磁學 Electromagnetics	3	電子系 EE	任選 4 科 (資工系類似課程可以申請抵免) <b>Pick at least 4 courses</b> (similar ones in CS department can be used to waive courses listed here)
		控制系統導論 Introduction to Control Systems	3	電子系 EE	
		數位訊號處理 Digital Signal Processing	3	電子系 EE	
		超大型積體電路設計導論 Introduction to VLSI Design	3	電子系 EE	
		類比積體電路導論 Analog Integrated Circuits	3	電子系 EE	
		電力電子導論 Fundamental of Power Electronics	3	電子系 EE	
		數位電路與系統 Digital Circuits and Systems	3	電子系 EE	
		通訊原理 Principles of Communication Systems	3	電子系 EE	
		半導體元件物理 Semiconductor Device Physics	3	電子系 EE	
		材料科學導論 Introduction to Materials Science	3	電子系 EE	
		電子設計自動化概論 Introduction to Electronic Design Automation	3	電子系 EE	
		固態物理 (一) Solid State Physics (I)	3	電子系 EE	
	校必修 Common Required Courses		28	校必修：含共同必修 28 學分 (含外語課程必修 8 學分)，至多採計 40 學分 [註 1] Required courses of the university (including 28 credits of general education subjects, 8 credits of foreign language course inclusive with the maximum 40 credits countable)	

最低畢業學分 Minimum Credits Required for Graduation	128	
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註 1：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 28 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。