

# 國立陽明交通大學資訊工程學系跨域學程實施要點

National Yang Ming Chiao Tung University Department of Computer Science

## Implementation Guidelines for Cross-Disciplinary Program

資訊工程學系 110 學年度第 4 次課程委員會修訂(110 年 10 月 25 日)

資訊學院 110 學年度第 3 次課程委員會修訂(110 年 11 月 1 日)

110 學年度第 3 次校課程委員會通過(110 年 12 月 2 日)

110 學年度第 2 次教務會議核備通過(110 年 12 月 16 日)

資訊工程學系 111 學年度第 6 次課程委員會修訂(112 年 4 月 14 日)

資訊學院 111 學年度第 4 次課程委員會修訂(112 年 4 月 18 日)

111 學年度第 3 次校課程委員會通過(112 年 5 月 16 日)

111 學年度第 4 次教務會議核備通過(112 年 5 月 30 日)

- 一、依據國立陽明交通大學跨域學程實施辦法，國立陽明交通大學資訊工程學系(以下簡稱本系)為鼓勵大學部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 1 These Implementation Guidelines are prescribed by National Yang Ming Chiao Tung University Department of Computer Science(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 in expanding second specialty.

- 二、跨域學程係指由陽明交通大學的學系、研究所、或學院提出第二專長模組課程，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 2 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 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 students 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、本要點修業規定

#### Article 3 Policies of these Guidelines

##### 1. 本系學生欲修習跨域學程者

##### 1. For students of our department who would like to take cross-disciplinary program

- (1) 得於下學期向本系提出申請，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。

- (1) The application could be submitted to our department during the second semesters. The department or college of the second specialty that students 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 information of evaluation documents needed preparing as well as the quota opened to students of 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 only take the cross-disciplinary program after evaluation by both sides.

(2)本系學生修習跨域學程課程包：校定必修(含共同必修 26 學分)、基礎學科 14 學分、必修 31 學分、學程選修 12 學分、本系必修及主題學程課程(參閱本系必修科目表)、本系專業選修課程(至少 12 學分)(需修本系所開授的各專業科目，含大學部、研究所選修課程)、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。本系甲組選擇跨域學程為畢業條件者，依本系必修科目表規定。

(2)For a CS student that has been enrolled in a cross-disciplinary program offered by another department or college, all the courses that the student must take include compulsory courses of the university (including 26 credits of general education subjects), compulsory courses offered by the CS department, professional elective course offered by the CS department (at least 12 credits)(including elective courses in both undergraduate and graduate programs), and courses of the cross-disciplinary program where the student has been enrolled with minimal 128 credits for graduation. When a CS student fulfills all the requirements of a cross-disciplinary program offered by another department, the student will be recognized as possessing a cross-disciplinary specialty at that department. The recognition will be noted right after the title of the CS department on the student's 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，改修習原資訊工程學系的學士學位課程。

(3)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 the bachelor degree program at their original Department of Computer Science.

2.外系學生欲修習跨域學程且選擇本系做為其跨域專長者

2.For students of other departments who would like to study for cross-disciplinary program and choose our department as their cross-disciplinary specialty

(1)得於下學期向其所屬學系(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。

(1)They could submit the application to the department that they belong to during the second semester, they could only 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「資訊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資訊工程為其跨域專長。

(2)The courses for the students of 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 Computer Science" with at least 128 graduate credits. The Department of

Computer Science will be remarked as their cross-disciplinary specialty after the title of their original department on the diploma.

3.若外系與本系已另訂定兩系雙向鎖定之跨域學程實施要點，則相關學生應依該實施要點提出修習跨域學程申請。

3.If our department and other department has already prescribed cross-disciplinary program guidelines, students should submit the application to their department based on those guidelines.

四、跨域模組課程與學生本系應修課程及學分重複者，由第二專長的系所或學院指定與專長相關選修課程補足。

Article 4 If the courses of the cross-disciplinary program module curriculum are the same with those of the required courses at the Major department, the duplicated credits must be made up with the elective courses related to the specialty appointed by the department or college of the second specialty.

五、本系所設立之跨域學程之單位主管或其指定之專任教師擔任學程召集人，統籌執行學程各項事宜。學程召集人需指定至少一名專任教師擔任跨域學程導師，專責輔導跨域學程學生。

Article 5 The Unit Chief or a full-time teacher of the cross-disciplinary program established by our department shall act as the convener of the cross-disciplinary program to coordinate the implementation of various matters of the program. The convener of the program must appoint at least one full-time teacher to serve as a cross-disciplinary program tutor, who is responsible for tutoring 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，由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，教師的授課時數可按到場時數計，但以開課前該門課程之實際簽呈為依據。

Article 6 In order to encourage different departments or colleges working together for designing cross-disciplinary curriculum, teaching hours for the innovative cross-disciplinary curriculum offered by more than two teachers could be calculated based on the actual teaching hours. However, the calculation will only be eligible with the official approval obtained before the curriculum starts.

七、修讀跨域學程學生在獲核准前已修習及格之科目學分，若合於第二專長模組課程應修課程學分，得經第二專長的系所或學院審查同意後，予以追加採認。

Article 7 The credits having obtained before the student is admitted to take the cross-disciplinary program can only be counted if the credits are recognized by the department or college of the second specialty.

八、修讀跨域學程學生之選課手續應於加退選期限內完成，且每學期所修之第二專長模組課程科目、學分及成績均列記於其歷年成績表內。

Article 8 Students taking a cross-disciplinary program shall enroll courses of the program by the deadlines of course registration. The courses, credits, and grades of the cross-disciplinary program module curriculums should be listed in the annual transcripts in each semester.

九、學生之第二專長模組課程學分及成績分別併入學期修讀學分總數及學期平均成績計算。

Article 9 The courses, credits, and grades of cross-disciplinary program are incorporated into the student's semester credits and average grades.

十、修讀跨域學程學生，擬終止修讀跨域學程者，應至教務處申請撤銷其跨域學程資格，並回復至所屬學系修課規定。其已修習及格之第二專長模組課程學分，經所屬學系核定，報教務處備查後得抵免其所屬學系選修課程學分。

Article 10 If Students taking a cross-disciplinary program intend to terminate the study in the cross-disciplinary program, they shall register with the Office of Academic Affairs for withdrawal from the program and follow the regulations and requirements of major department. The passed courses of the cross-disciplinary program can be used as credit waiver against the ones of core courses in the major department with the approval of the Major department and submit to the Office of Academic Affairs for archiving purposes.

十一、修讀跨域學程學生凡符合跨域學程規定畢業者，其畢業生名冊、歷年成績表及學位證書應加註跨域專長名稱。但畢業時如尚未修滿跨域學程規定之科目與學分，不得申請發給有關跨域學程之任何證明。

Article 11 For students who earn sufficient credits and meet the requirements of the cross-disciplinary program, the name of the cross-disciplinary program will be noted in the graduates roster, transcripts, and diplomas, otherwise, no certificate of the cross-disciplinary program will be issued.

十二、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 12 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.

十三、本要點經系、院及校級課程委員會審查通過後實施，修訂時亦同。

Article 13 These guidelines were approved by Curricular Committee at department, college and university level before putting it into practice; the same shall be done upon any amendment thereto.

## 資訊工程學系 跨域模組課程 必修科目表

### Compulsory subject list of Department of Computer Science Cross-disciplinary Program

類別 Category	選別 Type	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			
<p>本系跨域模組 (31 學分) Cross-Disciplinary module curriculum of our department</p> <p>修畢於畢業證書加註：「跨域專長：資訊工程」</p> <p>It could be remarked as “Cross-Disciplinary Specialty : Computer Science” on the diploma after the module curriculum is completed.</p>	<p>必修 (15 學分)</p> <p>Compulsory courses (15 credits)</p>	<p>計算機概論與程式設計 Intro. to Computers and Programming</p>	3		資工系 Dept. of Computer Science	<p>若為原系之必修課程，不足之學分得於本系跨域模組選修課任選。 Excluding compulsory courses of the original department</p>	
		<p>資料結構與物件導向程式設計 Data Structures and Object-oriented Programming</p>		3			
		<p>離散數學 Discrete Mathematics</p>		3			
		<p>數位電路設計 Digital Circuit Design</p>		3			
		<p>演算法概論 Intro. to Algorithms</p>	3				
		<p>基礎程式設計 Basic Programming</p>		0			
	<p>選修 (16 學分)</p> <p>Elective courses (16 credits)</p>	<p>作業系統概論 Intro. to Operating Systems</p>	3			資工系 Dept. of Computer Science	<p>本課程及格條件為通過「程式能力鑑定」 Pass=Passing Basic Computer Programming Exam</p> <p>任選 16 學分 Optional 16 Credits</p>
		<p>計算機組織 Computer Organization</p>		3			
		<p>資訊工程專題 (一)(二) Computer Science and Engineering Projects(I)(II)</p>	2	2			
		<p>編譯器設計概論 Intro. to Compiler Design</p>	3				
<p>嵌入式系統設計概論與實作 或 嵌入式系統總整與實作 二擇一</p> <p>Intro. to Embedded Systems Design and Implementation or Embedded Systems Capstone</p>			3				
<p>計算機網路概論 Intro. to Computer Networks</p>		3					
<p>網路程式設計概論 Intro. to Network Programming</p>		3					
<p>網路通訊原理 或 通訊原理與無線網路 二擇一</p> <p>Principles of Network or Communications or Principles of</p>			3				

	Communications and Wireless Networks		
	計算機圖學概論 Intro. to Computer Graphics	3	
	影像處理概論 Intro. to Image Processing		3
	數值方法 Numerical Methods		3
	機率 Probability	3	
	訊號與系統 Signals and Systems		3
	正規語言概論 Intro. to Formal Language		3
	微處理機系統實驗 或 微處理機系統原理與實作 二擇一 Microprocessor System Lab. or Microprocessor Systems: Principles and Implementation	3	
	線性代數 Linear Algebra	3	
	數位電路實驗 Digital Circuit Lab.	3	
	電路與電子學(一) Electrical Circuits and Electronics I	3	
	資料庫系統概論 Intro. to Database Systems	3	
	人工智慧概論 Intro. to Artificial Intelligence		3
	機器學習概論 Intro. to Machine Learning	3	
	人工智慧總整與實作 Artificial Intelligence Capstone		3
	密碼學概論 Intro. to Cryptography		3
	電腦安全總整與實作 Computer Security Capstone		3
	多媒體與人機互動總整與實作 Multimedia and Human Computer Interaction Capstone	3	
	網路系統總整與實作 Network Systems Capstone		3
	計算機系統管理 Computer System Administration	3	
	組合數學 Combinatorial Mathematics		3
	競技程式設計(一) Competitive Programming (I)		3

※資訊工程專題（二）為資訊工程學系跨域模組課程之第二專長總整課程。

Computer Science and Engineering Projects II is the capstone of the module curriculum of the second specialty in CS

※重要課程擋修制度請參閱本系學士班修業辦法。

For the prerequisite of some important courses, please check the undergraduate regulations.