

國立交通大學應用化學系跨域學程實施要點

National Chiao Tung University

Department of Applied Chemistry

Implementation Guidelines for Cross-Disciplinary Program

一百零五年三月十八日課程委員會議訂定

一百零五年三月三十一日課程委員會議修訂

一百零五年四月十三日系務會議修訂公佈

一百零六年十月二十五日課程委員會議修訂

一百零六年十二月二十日系務會議修訂公佈

As drafted by The 9th Curriculum Committee Meeting of Department of Applied Chemistry.(Mar 18th, 2016)

Revised by The 10th Curriculum Committee Meeting of Department of Applied Chemistry.(Mar 31th, 2016)

Revised and announced by The 6th Meeting of Department of Applied Chemistry.(Apr 13th, 2016)

Revised by The 9th Curriculum Committee Meeting of Department of Applied Chemistry.(Oct 25th, 2017)

Revised and announced by The 4th Meeting of Department of Applied Chemistry.(Dec 20th, 2017)

- 一、依據國立交通大學跨域學程實施辦法，國立交通大學應用化學系(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[C1]。

The implementation guidelines of the **cross-disciplinary program** are established by Department of Applied Chemistry (hereinafter referred to as our department) at the National Chiao Tung University (NCTU). They are based on the cross-disciplinary program implementation regulations of NCTU. The goal of the **cross-disciplinary program** is to provide the [C2]undergraduate students with an opportunity to participate in cross-disciplinary learning with no or only few additional credits.

- 二、依據國立交通大學跨域學程實施辦法，跨域學程係指由交通大學的學系、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」。

The cross-disciplinary study program comprises the cross-disciplinary module curriculums offered by the departments, institutes, or colleges of the National Chiao Tung University. Each module curriculum should include the core knowledge curriculum of a specific field. The total number of credits is no less than 28 but no more than 32 credits. The cross-disciplinary study program undertaken by the students includes the cross-disciplinary program module curriculum of the department they belong to as well as the cross-disciplinary program module curriculum offered from the second specialty department, institute or college. The module curriculum of the second specialty will be indicated as the “Cross-Disciplinary Specialty” on the diploma.

- 三、凡本校104學年度(含)之後入學之學士班學生均適用本實施要點。

These guidelines apply to the students enrolling the NCTU in or after the academic year 2015/2016.

1. 本系學生欲修習跨域學程者

1. Student of our department who apply for taking the cross-disciplinary study 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，本系將於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等資

訊，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 should be submitted to our department before the application deadline, which will be announced annually by our department. The students must indicate the department, institute, or college of the second specialty on the application form. The call for applications will list all the required documents and the quota of students who can join this program offered by our department in any given year.

After the approval by the curriculum committee in our department, the application forms will be forwarded to the department, institute or college of the second specialty for the second evaluation. Students can enroll in the cross-disciplinary study program only after having the approval from both sides (our department and the department, institute or college of the second specialty).

- (2) 本系學生修習跨域學程的課程，列示於『應用化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28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132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 the cross-disciplinary program available for the students of our department will be listed in the document entitled, "Required course list for the students of the Department of Applied Chemistry of NCTU who join the cross-disciplinary study program". These courses include the required courses of NCTU (including 28 credits of general education subjects), the core curriculum of our department, the cross-disciplinary module curriculum of our department, and the cross-disciplinary module curriculum of the second specialty from other department, institute or college (hereinafter referred to as the cross-disciplinary module curriculum at other departments, institutes or colleges). Total number of credits for graduation is 132. Fulfilling the cross-disciplinary module curriculum in other departments, institutes or colleges will entitle the student for the cross-disciplinary specialty. The name of the second specialty will appear on the graduation diploma in a form of a suffix to the name of our department.

- (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，改修習原應用化學系的學士學位課程。

The students of our department, who fail to fulfill the cross-disciplinary program requirements can withdraw from the cross-disciplinary program and return to the original (non-cross-disciplinary) program of study.

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. Students of other departments, institutes or colleges who apply for the cross-disciplinary study program and choose our department 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。

(1) Students of other departments, institutes or colleges have to submit the application for the cross-disciplinary program to their original department, college, or institute before the application deadline

announced annually by NCTU. These students can only join the cross-disciplinary study program after their application is 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28學分)，原系基礎必修課程，原系跨域模組課程，以及列示於『應用化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應用化學為其跨域專長。

(2) Students of other departments, institutes or colleges who apply for the cross-disciplinary study program and choose our department as their second specialty have to pass the required courses of the university (including 28 credits of general education subjects), the core curriculum of their original department, the cross-disciplinary module curriculum of their original department, and the module curriculum specified in the document "The required course list for the students who join the cross-disciplinary module curriculum in the Department of Applied Chemistry". Total number of credits required for graduation is 128. The name "Cross-Disciplinary Specialty of Applied Chemistry" will appear on the graduation diploma as a cross-disciplinary specialty in a form of a suffix to the name of the student's original department.

四、 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。

Our department will assign at least one full-time teacher to be the mentor of the students enrolled in the cross-disciplinary study program. She/he will form a mentoring team with the teachers of the cross-disciplinary programs from other departments, institutes or colleges. The mentors and the mentoring team provide guidance/assistance to the students of the cross-disciplinary study program.

五、 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，得依本校教師授課鐘點核計原則第9條第6款規定，教師的授課鐘點數可按到場時數計，但以開課前該門課程實際簽呈為依據。

In order to encourage different departments, institutes or colleges to work together on the cross-disciplinary curriculum, the new curriculum offered by more than two teachers will be counted as the actual time of teaching, according to Subparagraph 6, Article 9 of the National Chiao Tung University Teaching Hours Accounting Principle. However, this counting method has to be approved by Office of Academic Affairs before the course starts.

六、 本實施要點如有未盡事宜，悉依本校學則及其他相關規定辦理。

If there are any other relevant matters, which have not been covered by these guidelines, it shall be handled in accordance with the NCTU constitution as well as other relevant regulations.

七、 本實施要點經系務會議通過，依序經院及校級課程委員會通過，並提教務會議核備後實施。修改時亦同。

These guidelines have to be approved by the Department Meeting, the Curriculum Committee of the College of Science, and the Curriculum Committee of the NCTU, and the approved guidelines would be submitted to the Council of Academic Affairs for final approval before implementation. The same procedures should be followed upon any amendment thereto.

應用化學系跨域學程 本系學生 必修科目表

Required course list for the students of the Department of Applied Chemistry of NCTU who join the cross-disciplinary study program

類別 Category	科目名稱 Course Name	學分 Number of Credits	開課系所 Department	備註 Remarks
本系基礎必修(67 學分) Core curriculum in the Department of Applied Chemistry (67 credits)	導師時間 Mentor Hour	0	應用化學系 Applied Chemistry	
	化學 General Chemistry	6		
	化學實驗 General Chemistry Labs	2		
	普通物理 General Physics	8		
	普通物理實驗 General Physics Labs	2		
	微積分 Calculus	8		
	有機化學 Organic Chemistry	8		
	有機化學實驗 Organic Chemistry Labs	4		
	分析化學 Analytical Chemistry	6		
	分析化學實驗 Analytical Chemistry Labs	2		
	應用數學 Applied Mathematics	3		
	物理化學 Physical Chemistry	8		
	物理化學實驗 Physical Chemistry Labs	2		
	無機化學 Inorganic Chemistry	6		
書報討論 Seminar	2			

		67	
他系跨域模組(28-32 學分) Cross-disciplinary modules in other departments (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 offered by other departments, institutes or colleges at our university; complete one of these programs.		
合計 Total			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] 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) [Note]
最低畢業學分 Minimum Graduate Credits		132	

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 28 學分以上，本校至多可採至 40 學分於最低畢業學分內，但各系另有規定者，從其規定。

Note : According to the rules included in the Table of General Education Subjects 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 for more than 28 credits, at most 40 credits could be counted as the graduate credits by our university. Please follow the regulations of each department regarding this matter if they are available.

應用化學系 跨域模組課程 必修科目表

The required course list for the students who join the cross-disciplinary module curriculum in the Department of Applied Chemistry

類別 Category	科目名稱 Course Name	學分 Credit	開課系所 Department	備註 Remark	
本系跨域模組：基礎 必修 Cross-disciplinary modules in the Department of Applied Chemistry: (obligatory courses)	有機化學(一) Organic Chemistry (I)	4	應用化學系 Applied Chemistry	應選修左列 8 門 之任何 4 門 The student should take and pass at least four courses from the eight obligatory courses listed here.	
	有機化學(二) Organic Chemistry (II)	4			
	分析化學(一) Analytical Chemistry (I)	3			
	分析化學(二) Analytical Chemistry (II)	3			
	物理化學(一) Physical Chemistry (I)	4			
	物理化學(二) Physical Chemistry (II)	4			
	無機化學(一) Inorganic Chemistry (I)	3			
	無機化學(二) Inorganic Chemistry (II)	3			
		28			
	本系跨域模組：核心 選修 Cross-disciplinary modules in the Department of Applied Chemistry: (core courses)	有機化學Ⅲ Organic Chemistry (III)			3
有機光譜分析 Spectroscopic Analysis of Organic Compounds		3			
無機化學特論 Special Topics in Inorganic Chemistry		3			
分析化學特論 Special Topic in Analytical Chemistry		3			
分析化學Ⅲ Analytical Chemistry (III)		3			
高分子化學		3			

	Polymer Chemistry			
	物理化學Ⅲ Physical Chemistry (III)	3		
	化學應用群論 Group Theory for Chemistry	3		
	物理化學特論 Special Topic in Physical Chemistry	3		
	生物化學 Biochemistry	3		
總學分 Total Credits		28	基礎必修及核心選修合計修畢 28 學分後，於畢業證書加註『跨域專長：應用化學』 The students who obtain 28 credits from obligatory courses and core courses will be eligible to obtain the remark "Cross-Disciplinary Specialty of Applied Chemistry" on their diploma.	