

國立陽明交通大學應用化學系跨域學程實施要點
National Yang Ming Chiao Tung University
Department of Applied Chemistry
Implementation Guidelines for Cross-Disciplinary Program

一百一十年九月二十七日系課程委員會議訂定
一百一十年十月六日系務會議修訂公佈
一百一十年十一月三日院課程委員會會議通過
一百一十年十二月二日校課程委員會通過
一百一十年十二月十六日教務會議核備通過
一百一十二年三月十五日系務會議修訂公佈
一百一十二年四月十一日院課程委員會會議通過
一百一十二年四月十九日系務會議修訂公佈
一百一十二年四月十九日院課程委員會會議通過
一百一十二年五月十六日校課程委員會通過
一百一十二年五月三十日教務會議核備通過
一百一十三年三月二十七日系務會議修訂公佈
一百一十三年四月十六日院課程委員會會議通過
一百一十三年五月二十日校課程委員會通過

As drafted by the 3rd Curriculum Committee Meeting of Department of Applied Chemistry (Sep. 27th, 2021)
Revised and announced by the 1st Meeting of Department of Applied Chemistry (Oct. 6th, 2021)
Passed by the Curriculum Committee Organization of College of Science (Nov. 3rd, 2021)
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Passed by the Curriculum Committee Organization of College of Science (Apr. 16th, 2024)
Passed by the 3rd NYCU Curriculum Committee (May 20th, 2024)

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。

Article 1 The implementation guidelines of the **cross-disciplinary program** are established by Department of Applied Chemistry (hereinafter referred to as our department) at the National Yang Ming Chiao Tung University (NYCU). They are based on the cross-disciplinary program implementation regulations of NYCU. The goal of the **cross-disciplinary program** is to provide the undergraduate students with an opportunity to participate in cross-disciplinary learning with no or only a few additional credits.

二、依據國立陽明交通大學跨域學程實施辦法，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 study program comprises the cross-disciplinary module curriculums offered by the departments, institutes, or colleges of the National Yang Ming Chiao Tung University. Each module curriculum should include the core knowledge curriculum of each specific field. The total number of credits is no less than 28 but no more than 32 credits. The cross-disciplinary study program taken by 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 name of the module curriculum of the second specialty will be marked 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。

Article 3 These guidelines for 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. Students in our department who apply for 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 department, institute, or college of the second specialty should be remarked on the application form. All the required documents and the quota of students who can join this program offered by our department in any given year will be listed.

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 the cross-disciplinary study program only after 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、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 the cross-disciplinary program available for the students in our department will be listed in the document entitled, "Required course list for the students of the Department of Applied Chemistry of NYCU who join the cross-disciplinary study program". These courses include the required courses of NYCU, 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 128. After fulfilling all the requirement, the name of the second specialty will be marked on the graduation 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，改修習原應用化學系的學士學位課程。

The students in 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 from 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 from other departments, institutes, or colleges have to submit the application for the cross-disciplinary program to their original department, college, or institute before the deadline announced annually by NYCU. These students can 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、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 from 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, 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". The total number of credits required for graduation is 128. The name "Cross-Disciplinary Specialty of Applied Chemistry" will be marked on the graduation diploma as a cross-disciplinary specialty.

四、各系所或學院所設立之跨域學程，以開設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 4 For the cross-disciplinary program established by any department or college, the Director that established the course or a full-time teacher designated by the Director 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.

五、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規定辦理。

Article 5 In order to encourage different departments or colleges to work together to design cross-disciplinary curriculum, teaching hours for the innovative cross-disciplinary 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.

六、修讀跨域學程學生在申請通過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 6 The credits of cross-disciplinary program module curriculums obtained before the student is admitted to take the cross-disciplinary program can be counted if the credits are recognized by the department or college of the second specialty.

七、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 7 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.

八、 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 8 The courses, credits, and grades of cross-disciplinary program are counted in the student's semester credits and average grade.

九、 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 9 Students intending to terminate the cross-disciplinary program shall inform the Office of Academic Affairs for withdrawal from the program and follow the regulations and requirements of their major department. The credits of the cross-disciplinary program can be used as credit waiver against the core courses with the approval of students' original department. The application should be submitted to the Office of Academic Affairs for archiving purposes.

十、 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 10 For students who take sufficient credits and meet the requirements of the cross-disciplinary program, the department 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.

十一、 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。

Article 11 If there is any unaccomplished matter of these regulations, it shall be handled in accordance with the school constitution of our university as well as other relevant regulations.

十二、 本實施要點經系務會議通過，依序經院及校級課程委員會審查通過後實施。修改時亦同。

Article 12 These guidelines have to be approved by the Department Meeting, the Curriculum Committee of the College of Science, and the Curriculum Committee of the NYCU 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 NYCU 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 | | 128 | 校共同必修：依學校共同課程 通則辦理。 general education: follow the regulations for general education courses of the university. | |

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: (required 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 Students should take and pass at least four courses from the eight required 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 | | |
| 本系跨域模組：核心選修 Cross-disciplinary modules in the Department of Applied Chemistry: (elective core courses) | 有機化學 III Organic Chemistry (III) | 3 | 應用化學系 Applied Chemistry | 左列 15 門課程任選 Students could take any courses from the fifteen elective core courses. |
| | 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 Polymer Chemistry | 3 | | |
| | 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 | | |
| | 藥物設計 Drug Design and Development | 3 | | |
| | 固態化學 Solid State Chemistry | 3 | | |
| | 分析光譜特論 Special Topics in Analytical Spectroscopy | 3 | | |
| | 酵素化學 Enzyme Chemistry | 3 | | |
| | 生物技術特論 Molecular Biotechnology | 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」
students who obtain 28 credits from
required courses and elective core
courses will be eligible to obtain the
remark "Cross-Disciplinary Specialty
of Applied Chemistry" on their
diploma.