國立陽明交通大學生物資訊及系統生物研究所跨域學程實施要點

NYCU The Institute of Bioinformatics and Systems Biology Implementation Guidelines for Cross-Disciplinary Program

生物科技學系、分子醫學與生物工程研究所、生物資訊及系統生物所聯席課程委員會修訂(112 年 3 月 22 日)
生物科技學院院課程委員會修訂(112 年 4 月 12 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)
生物科技學系、分子醫學與生物工程研究所、生物資訊及系統生物所聯席課程委員會修訂(112 年 12 月 7 日)
生物科技學院院課程委員會修訂(113 年 4 月 11 日)
112 學年度第 3 次校課程委員會通過(113 年 5 月 20 日)

一、依據國立陽明交通大學跨域學程實施辦法，國立陽明交通大學生物資訊及系統生物研究所(以下簡稱本所)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 1 These Implementation Guidelines are prescribed by National Yang Ming Chiao Tung University The Institute of Bioinformatics and Systems Biology (hereinafter referred to as Our Institute) 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、 本要點所稱跨域學程係指由各學系、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(最低可為28學分，最高不可超過32學分)為原則，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 Chiao Tung University. Module curriculum should include the core knowledge curriculum of the field and the total credits will be based on 30 credits (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、 本要點實施對象

Article 3 Implementation objects of these Guidelines

1. 凡本校104學年度（含）之後入學之學士班學生均適用本辦法。

1. People applicable to this program: undergraduate students who are or after class of 2019.

2.外系學生欲修習跨域學程且選擇本所做為其跨域專長者

2. For students from 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，通過原系以及本所的雙邊審

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 semesters, and they could only take the cross-disciplinary program after approved by both their original department and our institute.

(2) 外系學生修讀跨域學程且選擇本所做為其跨域專長者，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「生物資訊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生物資訊為其跨域專長。

(2) 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 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 institute of Bioinformatics" with at least 128 graduate credits. The Bioinformatics will be remarked as their cross-disciplinary specialty after the title of their original department on the diploma.

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 credits of the cross-disciplinary program module curriculum are the same with those of the required courses at students' major department, the duplication must be made up with the elective courses related to the specialty appointed by the department or college of the second specialty.

五、 本所指定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 5 Our institute assigned one full-time teacher to be the mentor in the cross-disciplinary program and formed a mentor group with teachers of cross-disciplinary program from 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 6 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 by the actual time of teaching according to National Yang Ming Chiao Tung University Teaching Hours Accounting Principle.

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 of cross-disciplinary program module curriculums 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 grade.

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 Students taking a cross-disciplinary program and intending to terminate the study in the cross-disciplinary program shall propose the withdrawal of the program to Office of Academic Affairs and follow the regulations and requirements of students' major department. The passed courses of the cross-disciplinary program can be used as credit waiver against the core courses of the major with the approval of the Major department. The approval should be submitted 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 department of the cross-disciplinary program will be noted in the graduate 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、 本要點經所課程委員會、院課程委員會及校級課程委員會通過後實施，修訂時亦同。

Article 13 These guidelines were approved by the institute Curricular Committee, confirmed by the Curriculum Committees of the home College and the University before putting it into practice; the same shall be done upon any amendment thereto.

生物資訊 跨域模組課程 必修科目表（B）

The Required Course List for the students study cross-disciplinary module curriculum in Institute of Bioinformatics

類別 Category	科目名稱 Course Name	學分 Credit	開課系所 Department	備註 Remark
(一)生物資訊跨域模組 （共 30 學分，必修 12 學分、選修 18 學分） Cross-disciplinary modules at our institute (30 credits) **修畢於畢業證書加註「跨域專長：生物資訊」** "Cross-Disciplinary Specialty: Bioinformatics" could be remarked on the diploma after the module curriculum is completed.	普通生物學(一)或 近代生物學(一) General Biology(I) or Modern Biology(I)	3	生物科技學系 或經所課程委員會認定同意 Department of Biological Science and Technology or departments approved by the Curriculum Committee	必修 12 學分 Required 12 credits
	計算生物概論 Introduction to Computational Biology	2		
	計算生物實驗 Computational Biology Lab.	1		
	生物化學(一) Biochemistry(I)	3		
	分子生物學(一) Molecular Biology (I)	3		
	生物統計 Biostatistics	3	生物科技學系 或經所課程委員會認定同意 Department of Biological Science and Technology or departments approved by the Curriculum Committee	選修 18 學分 Elective 18 credits
	生物機器學習 Machine Learning for Biology	3		
	生科應用數學 Applied Mathematics for Biological Science and Technology	3		
	結構生物資訊 Structural Bioinformatics	3		
	生物序列分析與高通量技術 Biological Sequence Analysis and High Throughput Technologies	3		
	分子演化 Molecular Evolution	3		
	計算化學特論 Selected topics in Computational Chemistry	3		
	生物資料庫理論與實作 Biological Databases: Theories and Practice	3		
	生物影像資訊學 Bioimage Informatics	3	生物資訊及系統生物研究所 或經所課程委員會認定同意 Department of Biological Science and Technology or departments approved by the Curriculum Committee	
	統計熱力學 Statistical Thermodynamics	3		
	計算系統生物學 Computational Systems Biology	3		
	分子模擬 Molecular Simulation	3		
	智慧型機器學習與電腦輔助藥物設計 Intelligent Machine Learning and Computer-aided Drug Design	3		

	計算生物學-建模與預測 Computational Biology: Modeling and Prediction	3		
總學分（30 學分） Total Credits (30 credits)		30		