國立交通大學 巨量資料分析 學分學程實施辦法

一、本學分學程結合本校資訊工程與統計學專長師資，開授整合統計分析、資訊科學、資料視覺化的跨領域課程，以培訓具備分析巨量資料能力的人才。

二、凡本校大學部與研究所學生，均得申請修讀本學程，修滿本學程規定之科目及學分者，由本校發給學程修畢證明。

三、本學程由資訊學院、理學院共同規劃，資訊工程系(所)、統計學研究所提供課程。

四、學生須於進入學程時繳交成績單，由本學程所規定之委員會審查該生之「程式設計」、「統計概論」二科是否符合大學部水準之課程。若有不足者，必須補修通過大學部等同課程，始得發給學程修畢證明。

五、本學程課程分為「先修課程」、「基礎核心課程」與「進階選修課程」(詳細課程內容，參見以下課程規劃表)。本學程之學分規定：(1) 須修滿下列規劃課程達 18 學分（含）以上。(2) 基礎核心課程至少修滿 9 學分。 (3) 進階選修課程至少修滿 6 學分。

學分學程課程規劃表

一、學程名稱：**巨量資料分析**

二、課程名稱及開課系所（總學分必須修滿 18 學分）：

A. 先修課程：學生須於進入學程時繳交成績單，由本學程所規定之委員會審查該生之「程式設計」、「統計概論」二科是否修過大學部水準之課程。若有不足者，必須補修通過大學部等同課程或選修通過研究所相關課程，始得發給學程修畢證明。

B. 基礎核心課程（至少修滿 9 學分）：

課程名稱	開課系所	學分	備註
資料探勘	資工系	3	
統計方法	統計所	3	或可修讀「統計應用方法」(生物資訊及系統生物研究所)
數據科學概論與軟體實務	資工系	3	
巨量資料分析技術與應用	資工系	3	
數據科學專題	資工系	3	

C. 進階選修課程（至少修滿 6 學分）：

課程名稱	開課系所	學分	備註
機器學習	資工系	3	或可修讀「機器學習」(應用數學系)
平行程式設計	資工系	3	
資料視覺化與視覺分析	資工系	3	
迴歸分析	統計所	3	
統計計算	統計所	3	
多變量分析	統計所	3	
統計學習	統計所	3	

三、召集人姓名：黃冠華　單位：統計所　數據所所長 單位：數據所

四、聯絡人姓名：郭碧芬　單位：統計所

NCTU Big Data Analysis Credits Programme

1. This programme combines both faculties of Computer Science and Statistics to provide cross-field courses integrating statistics analysis, information science, and data visualization in order to cultivate students with related skills.
2. All students (including postgraduate students) of NCTU can apply for this programme. Students will be certificated after completing all the required subjects and credits.
3. This programme is designed by College of Computer Science and College of Science. The courses are provided by Department of Computer Science and Institute of Statistics.
4. Student must submit transcript to a designated committee for examination. The committee will check if the student's grades on "Programming" and "Fundamentals of Statistics" meet the requirements for undergraduate students. Students who do not meet the requirements must fulfill the requirements by taking and passing their equivalent undergraduate-level courses. Students will be certificated after completing all these pre-required subjects and credits.
5. Courses are divided into "Prerequisite", "Basic Core Courses" and "Advanced Select Courses" (The details of courses, see as below). Requirements: (1) 18 credits in total are required from the courses listed below. (2) 9 credits at least are required for basic core courses. (3) 6 credits are required for advanced select courses.

Programme Curriculum

1. Programme: Big Data Analysis
2. Courses: (18 credits needed in total for completion)
   A. Prerequisite: Student must submit transcript to a designated committee for examination. The committee will check if the student's grades on "Programming" and "Fundamentals of Statistics" meet the requirements for undergraduate students. Students who do not meet the requirements must fulfill the requirements by taking and passing their equivalent undergraduate-level courses. Students will be certificated after completing all these pre-required subjects and credits.
   B. Basic Core Courses (9 credits at least are required)：

Course Title	Department	credits	Notes
Data Mining	CS	3	
Statistical Methods	Institute of Statistics	3	Or "Applied Methods in Statistics" (Institute of Bioinformatics and System Biology)
Introduction to Data Science and Software Practice	CS	3	
Big Data Analytics Techniques and Applications	CS	3	
Data Science Project	CS	3	

   C. Advanced Select Courses (6 credits at least are required)：

Course Title	Department	Credits	Notes
Machine Learning	CS	3	Or "Machine Learning" (Institute of Applied Mathematics)
Parallel Programming	CS	3	
Data Visualization and Visual Analytics	CS	3	
Regression Analysis	Institute of Statistics	3	
Statistical Computing	Institute of Statistics	3	
Multivariate Analysis	Institute of Statistics	3	
Statistical Learning	Institute of Statistics	3	