國立彰化師範大學
數學系碩士班畢業條件表暨課程架構表
(114學年度入學學生適用)

National Changhua University of Education

Graduation Requirements and Course Structure for Master's Program of Mathematics

(Applicable for students in 114 academic year)

列印日期(Print Date:2025/02/27)

一.系必修課程

Ⅰ.Department Required Courses

課程名稱 Course Name	學分/學時 Credit(s)/ Hour(s)	年級 Grade	學期 Semester
論文指導(一) Thesis Supervision I	3/0	2	1
碩士論文 Thesis	0/0	2	2
論文指導(二) Thesis Supervision II	3/0	2	2

二.系選修課程

Ⅱ.Department Elective Courses

課程名稱 Course Name	學分/學時 Credit(s)/ Hour(s)
中醫統計學(一) Statistics for Chinese Medicine I	3/3
分割理論(一) Theory of Partitions I	3/3
代數拓樸(一) Algebraic Topology I	3/3
生物統計 Biostatistics	3/3
生物資訊專題(一) Topics in Bioinformatics I	3/3
存活分析 Survival analysis	3/3
李群代數(一) Lie Groups Algebras I	3/3
泛函分析(一) Functional Analysis I	3/3
金融數學 Financial Mathematics	3/3
非線性分析(一) Nonlinear Analysis I	3/3
研究選題 Selected Topics in Research	2/2
矩陣理論(一) Matrix Theory I	3/3
高等幾何學(一) Advanced Geometry I	3/3
高等機率論(一) Advanced Probability Theory I	3/3

偏微分方程(一) Partial Differential Equations I	3/3
動態系統學(一) Dynamical Systems I	3/3
常微分方程(一) Ordinary Differential Equations I	3/3
組合(一) Combinatorics I	3/3
最佳化理論(一) Optimaization I	3/3
碎形幾何學 (一) Fractal Geometry (I)	3/3
解析數論(一) Analytic Number Theory I	3/3
資料分析專題：智慧製造 Topic on Data Analysis: Smart Manufacturing	3/3
資料科學 Data Science	3/3
網頁技術 Webpage Technology	3/3
數位影像處理理論與實務 Digital image Processing	3/3
數位學習專題(一) Topics on E-learning(一)	3/3
數論專題(一) Topics in Nmuber Theory I	3/3
數學教育專題(一) Topics in Mathematical Education I	3/3
數學教育通論 Introduction to Mathematical Education	3/3
數學結構(一) Mathematical Structures I	3/3
模論專題 (一) Topics in Module Theory (I)	3/3
機器學習 Machine Learning	3/3
隨機過程(一) Stochastic Process I	3/3
中醫統計學(二) Statistics for Chinese Medicine II	3/3
分割理論(二) Theory of Partitions II	3/3
代數拓樸(二) Algebraic Topology I I	3/3
生物資訊 Bioinformatics	3/3
生物資訊專題(二) Topics in Bioinformatics II	3/3
李群代數(二) Lie Groups Algebras II	3/3
泛函分析(二) Functional Analysis I I	3/3
表現理論專題 Topics in Representation Theory	3/3

非線性分析(二) Nonlinear Analysis I I	3/3
矩陣理論(二) Matrix Theory II	3/3
高等幾何學(二) Advanced Geometry II	3/3
高等資料探勘 Advanced data mining	3/3
高等機率論(二) Advanced Probability Theory II	3/3
偏微分方程(二) Partial Differential Equations II	3/3
動態系統學(二) Dynamical Systems II	3/3
常微分方程(二) Ordinary Differential Equations II	3/3
組合(二) Combinatorics II	3/3
統計計算 Statistical Computing	3/3
最佳化理論(二) Optimaization II	3/3
碎形幾何學 (二) Fractal Geometry (Ⅱ)	3/3
解析數論(二) Analytic Number Theory I I	3/3
資訊網路 Interactive Webpage Design	3/3
廣義線性模式 Generalized Linear Model	3/3
數位學習專題(二) Topics on E-learning(二)	3/3
數論專題(二) Topics in Nmuber Theory II	3/3
數學教育專題(二) Topics in Mathematical Education I I	3/3
數學結構(二) Mathematical Structures I I	3/3
數學學習心理學 Psychology of Learning Mathematics	3/3
模論專題(二) Topics in Module Theory (Ⅱ)	3/3
隨機過程(二) Stochastic Process II	3/3
隱寫分析 Introduction to Steganalysis	3/3
類別資料分析 Category Data Analysis	3/3
代數曲線論 Algebraic Curves	3/3
代數專題(一) Topics in Algebra I	3/3
代數數論(一) Algebraic Number Theory I	3/3

凸性分析(一) Convex Analysis I	3/3
半母數迴歸分析 Semi-parametric regression analysis	3/3
同調代數(一) Homology Algebra I	3/3
定點理論 Fix Point Theory	3/3
泛函分析書報討論(一) Seminar on Functional Analysis I	2/2
泛函分析專題(一) Topics in Functional Analysis I	3/3
空間統計書報討論(一) Seminar on Spatial Analysis I	2/2
空間統計專題(一) Topics in Spatial Statistics I	3/3
長期追蹤資料分析專題(一) Topics in Longitudinal Data Analysis I	3/3
非線性分析專題(一) Topics in Nonlinear Analysis I	3/3
非線性偏微分方程專題(一) Topics in Nonlinear Partial Differential Equation I	3/3
時間序列(一) Time Series Analysis(一)	3/3
特殊函數(一) Special Functions I	3/3
偏微分方程書報討論(一) Seminar on Partial Differential Eguations I	2/2
健康資料庫加值應用 Value-added applications on health related databases	3/3
動態系統專題 Topics in Dynamical systems	3/3
動態系統學書報討論(一) Seminar on Dynamical Systems I	2/2
密碼學書報討論(一) Seminar on Cryptography I	2/2
密碼學論文選讀(一) Reading in Cryptography(I)	3/3
常微分方程書報討論(一) Seminar on Ordinary Differential Eguations I	2/2
混沌動態系統(一) Chaos and Dynamical Systems I	3/3
統計推論 (一) Statistical Inference I	3/3
統計諮詢理論與實務 Statistics Consultancy - Theory and Practice	3/3
測驗統計理論研究(一) Modern Measurement Theory I	3/3
資料庫 Databases	3/3
資料探勘專題(一) Topics in Data Mining I	3/3
資訊安全專題(一) Topics in Information Security I	3/3

資訊隱藏論文選讀(一) Topics in Data hiding (I)	3/3
數位影像處理論文選讀(一) Readings on Digital Image Processing(I)	3/3
數學建模的評量與教學 Assessment and Instruction of Mathematical Modeling	3/3
數學哲學書報討論(一) Seminar on Philosophy of Mathematics I	2/2
數學教育研究法 Topics in Mathematics Education Methodology	3/3
數學教育研究法專題(一) Topics in Mathematics Education Methodology I	3/3
數學教育研究的統計方法:理論與應用(一) Statistical Method for Research in Mathematics Education-theory and application I	3/3
數學教育論文寫作(一) Writing on Mathematic Education Research (I)	3/3
數學課程論文選讀(一) Mathematical Curriculum Literature(I)	3/3
數學論證的學習與教學(一) The learning and teaching of Mathematical argumentation I	3/3
獨立研究 Independent Study	3/0
隨機計算(一) Stochastic Calculation I	3/3
隨機過程專題(一) Topics in Stochastic Process I	3/3
應用貝式統計方法專題 (一) Topics in Applied Bayesian Statistical Methods I	3/3
環論專題(一) Topics in Ring Theory I	3/3
變分法書報討論(一) Seminar on Calculus of Variations I	2/2
代數專題(二) Topics in Algebra II	3/3
代數數論(二) Algebraic Number Theory II	3/3
凸性分析(二) Convex Analysis II	3/3
同調代數(二) Homology Algebra II	3/3
定點理論專題 Topics in Fix Point Theory	3/3
泛函分析書報討論(二) Seminar on Functional Analysis II	2/2
泛函分析專題(二) Topics in Functional Analysis I I	3/3
空間統計書報討論(二) Seminar on Spatial Analysis (II)	2/2
空間統計專題(二) Topics in Spatial Statistics II	3/3
長期追蹤資料分析專題(二) Topics in Longitudinal Data Analysis II	3/3
非線性分析專題(二)	3/3

Topics in Nonlinear Analysis II	
非線性偏微分方程專題(二) Topics in Nonlinear Partial Differential Equation II	3/3
計量財務 Quantitative Finance	3/3
時間序列(二) Time Series Analysis(二)	3/3
特殊函數(二) Special Functions II	3/3
偏微分方程書報討論(二) Seminar on Partial Differential Eguations II	2/2
動態系統學書報討論(二) Seminar on Dynamical Systems II	2/2
密碼學書報討論(二) Seminar on Cryptography II	2/2
密碼學論文選讀(二) Reading in Cryptography(II)	3/3
常微分方程書報討論(二) Seminar on Ordinary Differential Eguations II	2/2
混沌動態系統(二) Chaos and Dynamical Systems II	3/3
統計推論 (二) Statistical Inference II	3/3
統計諮詢實習 Statistics Laboratory	1/1
測驗統計理論研究(二) Modern Measurement Theory I I	3/3
資料探勘專題(二) Topics in Data Mining II	3/3
資訊安全專題(二) Topics in Information Security II	3/3
資訊隱藏論文選讀(二) Topics in Data hiding(II)	3/3
鞅論 Martingale Theory	3/3
數位影像處理論文選讀(二) Readings on Digital Image Processing(II)	3/3
數學哲學書報討論(二) Seminar on Philosophy of Mathematics II	2/2
數學教育研究法專題(二) Topics in Mathematics Education Methodology II	3/3
數學教育研究的統計方法:理論與應用(二) Statistical Method for Research in Mathematics Education-theory and application II	3/3
數學教育論文寫作(二) Writing on Mathematic Education Research(II)	3/3
數學課程論文選讀(二) Mathematical Curriculum Literature(II)	3/3
數學論證的學習與教學(二) The learning and teaching of Mathematical argumentation II	3/3
隨機計算(二) Stochastic Calculation II	3/3
隨機控制論 Stochastic Control Theory	3/3

隨機過程專題(二) Topics in Stochasitic Process II	3/3
應用貝式統計方法專題（二） Topics in Applied Bayesian Statistical Methods II	3/3
環論專題(二) Topics in Ring Theory II	3/3
變分法書報討論(二) Seminar on Calculus of Variations II	2/2

三.數學組組必修課程

Ⅲ.Required Courses for Mathematics Group

課程名稱 Course Name	學分/學時 Credit(s) / Hour(s)	年級 Grade	學期 Semester
分析通論(一) Analysis I	3/3	1	1
代數通論(一) Algebra I	3/3	1	1
分析通論(二) Analysis II	3/3	1	2
代數通論(二) Algebra II	3/3	1	2

四.機率統計組組選修課程

Ⅳ.Group ‘s Elective Course(s) for Probability and Statistics Group

課程名稱 Course Name	學分/學時 Credit(s)/ Hour(s)
統計領域課群(一)(至少6學分) **Statistics Program1(6 credits is least required)**	
分析通論(一) Analysis I	3/3
資料分析(一) Data Analysis I	3/3
數理統計(一) Mathematical Statistics I	3/3
統計領域課群(二)(至少6學分) **Statistics Program2(6 credits is least required)**	
分析通論(二) Analysis II	3/3
資料分析(二) Data Analysis II	3/3
數理統計(二) Mathematical Statistics II	3/3

五.資訊組組選修課程

Ⅴ.Group ‘s Elective Course(s) for Information Science Group

課程名稱 Course Name	學分/學時 Credit(s)/ Hour(s)
資訊領域課群(一)(至少6學分) **Information Program1(6 credits is least required)**	
分析通論(一)	3/3

Analysis I	
代數通論(一) Algebra I	3/3
高等演算法(一) Advanced Algorithms I	3/3
高等數論(一) Advanced Number Theory I	3/3
資料探勘 Data Mining	3/3
資訊隱藏 Introduction to Data hiding	3/3
數理統計(一) Mathematical Statistics I	3/3
資訊領域課群(二)(至少6學分) **Information Program2(6 credits is least required)**	
人工智慧 Artificial Intelligence	3/3
分析通論(二) Analysis II	3/3
代數通論(二) Algebra II	3/3
高等演算法(二) Advanced Algorithms II	3/3
高等數論(二) Advanced Number Theory I I	3/3
密碼學與資訊安全 Cryptography & Information Security	3/3
數理統計(二) Mathematical Statistics II	3/3

六.先修科目
VI.Prerequisite Courses

先修課程 Prerequisite Course	後修課程 Subsequent Course

七.畢業條件
VII.Graduation Requirements

一、本系最低畢業學分為24學分，〔統計領域之分析通論(一)(二)、數理統計(一)(二)及資料分析(一)(二)，三選二為組必修科目〕。
二、「論文指導(一)(二)」6學分及教育學分皆不計入畢業學分；凡註冊後應至少修習一門科目(含論文)，否則應辦理休學。已修畢最低畢業學分而論文尚在撰寫中者，次學年起每學期必須選修「碩士論文」。
三、選修課程，經指導教授同意可修習本、外校相關系、所碩、博士班課程並列入畢業學分，至多6學分為限。
四、凡選修本系及統資所開設之課程，均採認畢業學分。
五、本系研究生欲修習教育學程者，須經本校甄選通過後始可修讀；教育學分不計入畢業學分。
六、學生須參與本系或統資所每學年舉辦之學術演講場次達2/3以上，並經系辦審查通過方可畢業。
七、研究生應於申請學位考試前修習通過於「臺灣學術倫理教育資源中心」(https://ethics.nctu.edu.tw/)網路教學平台之「學術研究倫理教育」課程等相關規定。

Graduation Requirements for the Master’s Program

1.The minimum graduation credits for the Department are 24 credits. In the Group of Statistics, two out three courses are group-required: Analysis I,II, Mathematical Statistics I,II and Data Analysis I,II.

2. “Thesis Supervision I,II” worth 6 credits and education credits are not counted towards graduation credits. Students must enroll in at least one course (including thesis) after registration, otherwise they should apply for leave of absence. Those who have completed the minimum graduation credits but the thesis is still being written must take the “Master’s Thesis” course each semester starting from the following academic year.

3.With the consent of the supervising professor, other elective courses at the master and doctoral levels, from related departments or graduate programs within or outside the university, can be taken and counted towards graduation credits, with a maximum of 6 credits.

4.Credits earned from courses taken in the department and Graduate Institute of Statistics and Information Science will be recognized as graduation credits.

5.Graduate students in the department who wish to study education program must pass the university’s selection process before being allowed to enroll. Education credits are not counted towards graduation credits.

6.Students must participate in at least 2/3 of the academic seminars held by the department or the Graduate Institute of Statistics and Information Science each academic year, and must pass the review conducted by the department in order to graduate.

7.Before applying for the degree examination, graduate students must complete the relevant requirements, including taking the "Academic Research Ethics Education" course on the website of the "Center for Taiwan Academic Research Ethics Education" (https://ethics.nctu.edu.tw/).