



課 綱 Course Outline
應用數學系碩士班

中文課程名稱 Course Name in Chinese	代數專題 (二)				
英文課程名稱 Course Name in English	Topics in Algebra (II)				
科目代碼 Course Code	AM_58090	班 別 Degree	碩士班 Master' s		
修別 Type	選修 Elective	學分數 Credit(s)	3.0	時 數 Hour(s)	3.0
先修課程 Prerequisite					
課程目標 Course Objectives					
研習基本代數結構，以訓練學生處理複雜問題的簡化能力。 To study basic algebraic structures to train the students to have the ability to simplify and reduce complicated problems.					
系教育目標 Dept.' s Education Objectives					
1	訓練嚴謹思考與推理能力。 To provide a solid training in rigorous thinking and reasoning ability.				
2	奠定理論與應用數學的基礎知識。 To establish well-founded background knowledge in pure and applied mathematics.				
3	具備跨領域學習能力。 To prepare the students for interdisciplinary study in the future.				
系專業能力 Basic Learning Outcomes				課程目標與系專業能力相關性 Correlation between Course Objectives and Dept.' s Education Objectives	
A	具備專業數學知識及邏輯推理能力。 Have well-founded expertise in mathematics and be capable of logical reasoning.			●	
B	具備學習其它學科的能力，以期能邁向跨領域研究。 Be able to study other fields of science so as to conduct interdisciplinary research in the future.			○	
C	具備獨立思考與解決問題的能力。 Be capable of independent thinking and have the problem-solving skills.			●	
圖示說明 Illustration : ● 高度相關 Highly correlated ○ 中度相關 Moderately correlated					

課程大綱
Course Outline

1. 集合論：數學歸納法，鍾恩引理

Set Theory : mathematical induction, Zorn' s Lemma

2. 群表現：表現的特徵標，舒爾引理，常規表現的分解，正統分解

Group Representations: character of a representation, Schur' s Lemma, decomposition of the regular representation, canonical decomposition

3. 交換代數：環的維度，鍊條件，賦值環

Commutative Algebra : dimension of a ring, chain conditions, valuation ring..

4. 高等線性代數：二次形

Advanced Linear Algebra : bilinear forms

5. 體論

Filed Theory

資源需求評估（師資專長之聘任、儀器設備的配合．．．等）

Resources Required (e.g. qualifications and expertise, instrument and equipment, etc.)

由本系專任教師任教

Full time faculty

課程要求和教學方式之建議

Course Requirements and Suggested Teaching Methods

1. 課前預習 2. 教師講解 3. 演練習題 4. 學習評量

1. Preview before class 2. Lectures 3. Exercises 4. Exams

其他

Miscellaneous

撰寫人：應用數學系 周君彥

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