

Course Description

Department of Mathematics

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|--|----------------------|---|--|-------------------|---|
| Nature of the course <input type="checkbox"/> required <input checked="" type="checkbox"/> elective | | Area 麻煩老師勾選類別，或直接填寫 <u>Algebra</u> 。 | | | |
| | | <input checked="" type="checkbox"/> Algebra <input type="checkbox"/> Analysis <input type="checkbox"/> Geometry <input type="checkbox"/> Statistics <input type="checkbox"/> Applied Mathematics <input type="checkbox"/> Discrete Mathematics <input type="checkbox"/> Others | | | |
| Calculus <input type="checkbox"/> Calculus A <input type="checkbox"/> Calculus B | | | | | |
| Course number | 221 U1870 | Section number | | Number of credits | 3 |
| Course title | Ring Theory (II) 環論一 | | | | |
| Instructor | Tsiu-Kwen Lee [李秋坤] | | | | |

I. *Contents :

1. Polynomial identities:

A result on radicals;

Standard identities;

Kaplansky's Theorem for primitive PI-algebras;

The Kurosh Problem for PI-algebras;

2. Goldie's Theorem

Ore's Theorem;

Classical quotient rings;

Goldie's Theorems;

Posner's Theorem for prime PI-algebras;

Central polynomial for matrix rings;

3. Rings with generalized identities

Amitsur's Theory for primitive GPI-rings;

Martindale's Theorem for prime GPI-rings

Beidar's Theorem for semiprime GPI-rings

Chuang's Theorem for prime GPI-rings

4. Differential identities

Kharchko's Theorem for prime rings with differential identities

Chuang's Theorems for prime ring with derivations, auto- and anti-automorphisms

II. Course prerequisite :

Ring Theory (I)

III. *Reference material (textbook(s)) :

1. [Herstein, I. N.](#) Noncommutative rings. Reprint of the 1968 original. With an afterword by Lance W. Small. [Carus Mathematical Monographs, 15.](#) Mathematical Association of America, Washington, DC, 1994. xii+202 pp.
2. [Beidar, K. I.](#); [Martindale, W. S., III](#); [Mikhalev, A. V.](#) Rings with generalized identities. [Monographs and](#)

[Textbooks in Pure and Applied Mathematics, 196.](#) *Marcel Dekker, Inc., New York*, 1996. xiv+522 pp. ISBN: 0-8247-9325-0

IV. ***Grading scheme** : 請填寫各項計分之百分比，例如：作業 10% 報告 20%，總計 100%

期中 50% 期末 50%

V. **Others** :

VI. ***Course Goal** :

Study the main results in noncommutative ring theory for further research.

1. *號為必填欄位

2. 大綱內容字數英文最少 200 字以上