Course Description

Department of Mathematics

Nature of the course ☐ required ■ elective	Area_ ■Algebra ☐ Analysis ☐ Geometry ☐ Statistics ☐Applied Mathematics ☐ Discrete Mathematics ☐ Others		
Calculus ☐ Calculus A ☐ Calculus B			
Course number	221 U2050	Section number	Number of credits	3
Course title	COMMUTATIVE ALGEBRA (I)交換代數		
Instructor	Hui-Wen, Lin [林惠雯]		

I. **Contents**：

Commutative Algebra is an essential and important tool for Algebraic Geometry and Algebraic Number Theory. This course is designed to train students to have enough ability for more advanced study on the related topics. We intend to have the following contents:

1. Rings and modules of fractions
2. Noetherian rings and Artinian rings
3. Associated primes and Primary decomposition
4. Going-up and Going-down theorems
5. Homological Theory
6. Cohen-Macaulay rings
7. Dedekind domains
8. Dimension theory
9. Completions

II. **Course prerequisite**：

Algebra

III. **Reference material (textbook(s))**：Papers in Rings

M.F. Atiyah and I.G. Macdonald, Introduction to Commutative Algebra
H. Matsumura, Commutative Algebra

IV. **Grading scheme**：

期中考試＋期末考試 70%
平時作業　　　 30%

V. **Others**：

VI. ＊**Course Goal**：