Tamkang University Academic Year 112, 2nd Semester Course Syllabus

Course Title	ALGEBRA	Instructor	YAO CHENG
Course Class	TSMAM1A MASTER'S PROGRAM, DEPARTMENT OF MATHEMATICS, 1A	Details	◆ General Course ◆ Required ◆ 2nd Semester
Relevance to SDGs	SDG4 Quality education		

Departmental Aim of Education

Expose students to cutting-edge research areas in mathematics and data science, and enhance their ability to pursue professional careers or advanced studies in related specializations.

Subject Departmental core competences

A. Proficiency with fundamental knowledge in mathematics or statistics.(ratio:30.00)

B. Ability to recognize, formulate, and solve mathematics problems.(ratio:25.00)

C. Ability to conduct independent research and communicate mathematical or statistical concepts clearly and effectively.(ratio:25.00)

D. Ability to transform real-world problems into mathematical or statistical models. (ratio:10.00)

E. Ability to collect, analyze, interpret data, and present findings with visualization.(ratio:10.00)

Subject Schoolwide essential virtues

1. A global perspective. (ratio:10.00)

2. Information literacy. (ratio:30.00)

3. A vision for the future. (ratio:10.00)

4. Moral integrity. (ratio:5.00)

5. Independent thinking. (ratio:25.00)

6. A cheerful attitude and healthy lifestyle. (ratio:5.00)

7. A spirit of teamwork and dedication. (ratio:10.00)

8. A sense of aesthetic appreciation. (ratio:5.00)

Course Introduction	This is the second semester of the graduate algebra course. In this semester, we will introduce the Galois theory. We will start with the basic ring theory. Then we will move the field theory. The final part of this course will be the Galois theory. We will also touch the infinite Galois theory if time permits.

The correspondences between the course's instructional objectives and the cognitive, affective, and psychomotor objectives.

Differentiate the various objective methods among the cognitive, affective and psychomotor domains of the course's instructional objectives.

I. Cognitive : Emphasis upon the study of various kinds of knowledge in the cognition of the course's veracity, conception, procedures, outcomes, etc.

II.Affective : Emphasis upon the study of various kinds of knowledge in the course's appeal, morals, attitude, conviction, values, etc.

III.Psychomotor: Emphasis upon the study of the course's physical activity and technical manipulation.

No.	Teaching Objectives	objective methods
1	The aim of this course is letting students familiar with the Galois theory	Cognitive

The correspondences of teaching objectives : core competences, essential virtues, teaching methods, and assessment

No.	Core Competences	Essential Virtues	Teaching Methods	Assessment
1	ABCDE	12345678	Lecture, Discussion	Discussion(including classroom and online), Report(including oral and written)

Course Schedule

Week	Date	Course Contents	Note
1	113/02/19 ~ 113/02/25	Euclidean Domains	
2	113/02/26 ~ 113/03/03	Principal Ideal Domains and Unique Factorization Domains	
3	113/03/04 ~ 113/03/10	Factorization of Quadratic Integers	
4	113/03/11 ~ 113/03/17	The Field of Quotients of an Integral Domain	

5	113/03/18~ 113/03/24	Unique Factorization in Polynomial Domains	
6	113/03/25~ 113/03/31	Vector Space	
7	113/04/01~ 113/04/07	Simple Extensions	
8	113/04/08~ 113/04/14	Algebraic Extensions	
9	113/04/15~ 113/04/21	Splitting Fields	
10	113/04/22~ 113/04/28	Midterm Exam	
11	113/04/29~ 113/05/05	Separability	
12	113/05/06~ 113/05/12	Finite Fields	
13	113/05/13~ 113/05/19	The Galois Group	
14	113/05/20~ 113/05/26	The Fundamental Theorem of Galois Theory	
15	113/05/27~ 113/06/02	Solvability by Radicals	
16	113/06/03~ 113/06/09	Introduction to the Infinite Galois Theory	
17	113/06/10~ 113/06/16	Final Exam	
18	113/06/17~ 113/06/23	Alternative Learning Periods	

Key capabilities	
Interdisciplinary	
Distinctive teaching	
Course Content	Logical Thinking
Requirement	

Textbooks and Teaching Materials	Using teaching materials from other writers:Textbooks Name of teaching materials: Algebra, by T.W. Hungerford
References	
Grading Policy	◆ Attendance： ％ ◆ Mark of Usual：40.0 ％ ◆ Midterm Exam： 30.0 ％ ◆ Final Exam： 30.0 ％ ◆ Other〈 〉： ％
Note	This syllabus may be uploaded at the website of Course Syllabus Management System at http://info.ais.tku.edu.tw/csp or through the link of Course Syllabus Upload posted on the home page of TKU Office of Academic Affairs at http://www.acad.tku.edu.tw/CS/main.php . ※ **Unauthorized photocopying is illegal. Using original textbooks is advised. It is a crime to improperly photocopy others' publications.**