

Syllabus

Topics in Geometry I

Course Name	Course type (credit/hours)		전선(3/3)		Course code	
	Target students Division/major/grade		수학과/		Opening semester	2017년 1학기
	Class time and classroom		화C(팔621) 금C(팔621)(팔621)			
Reference to this course	Related basic courses					
	Recommended concurrent courses					
	Related advanced courses					
Instructor	Name (title/division)		황동선 (부교수/자연과학대학 수학과)			
	Office Room Number	팔달관 615호	Office phone Number	2559	e-mail	dshwang@ajou.ac.kr
	Office hours			Homepage address		
Teaching Assistant	Name (title/division)					
	Office Room Number		Office phone Number		e-mail	

1. Introduction

Lattice polytope is not only a classical subject but also it can be used as a basic object illustrating some of the recent mathematical theory.

In this course, we deal with the basic theory on lattice polytopes and as an application we study the toric Fano spaces. At the end of the semester, successful students will be at the research level of the related research field.

2. Course Objectives

3. Class types and activities

We mainly follow the textbook. Presentation by student on the recent related paper is strongly encouraged.

4. Teaching Method

We mainly follow the textbook.

5. Knowledge and ability required for taking this course

6. Method of Evaluation

Evaluation Item	The Number of Times	Evaluation Proportion	Remarks
Attendance		20%	
midterm exam	1	30%	
final exam	1	30%	기말고사는 학기말 발표로 대체 가능함.
quiz			
presentation	1	30%	
discussion			
homework		20%	
etc			

7. Textbooks

Main/Sub	Title	Writer	Publisher	Publication year
주교재	Lecture Notes on Lattice Polytopes(https://polymake.org/polytopes/paffenholz/data/preprints/ln_lattice_polytopes.pdf)	Christian Haase, Benjamin Nill, Andreas Paffenholz		

8. Lecture Schedule

Week	Lecture contents	Lesson type	Remark
1	Cones	Lecture	
2	Polytopes	Lecture	
3	Lattices	Lecture	
4	Lattice polytopes	Lecture	
5	Volume of lattice polytopes	Lecture	
6	Triangulations and Half-open Decompositions	Lecture	
7	Ehrhart's Theorem and Ehrhart Polynomial	Lecture	
8	Midterm Exam	Exam	
9	Geometry of Numbers	Lecture	
10	Reflexive polytopes	Lecture	
11	Gorenstein polytopes	Lecture	
12	The combinatorics of simplicial reflexive polytopes	Lecture	
13	Applications to toric Fano varieties	Lecture	
14	Unimodular Triangulations	Lecture	
15	Presentation of recent research by students	Presentation by students	
16	Final Exam	Exam	

9. Others

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