



T-104
2022

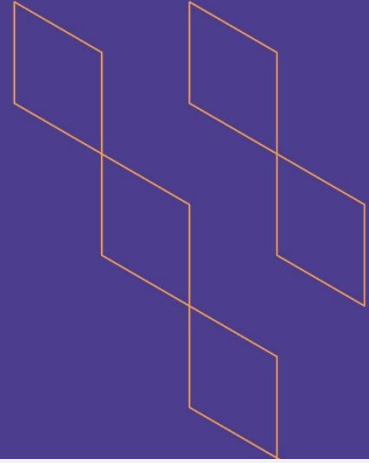
Course Specification





T-104
2022

Course Specification



Course Title:	Euclidean and Non-Euclidean Geometry
Course Code:	232Math-3
Program:	B.Sc. of Mathematics
Department:	Mathematics
College:	Art & Sciences
Institution:	Najran University
Version:	1
Last Revision Date:	07-05-2023



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A. General information about the course:

Course Identification	
1. Credit hours:	3
2. Course type	
a.	University <input type="checkbox"/> College <input type="checkbox"/> Department <input type="checkbox"/> Track <input type="checkbox"/> Others <input type="checkbox"/>
b.	Required <input checked="" type="checkbox"/> Elective <input type="checkbox"/>
3. Level/year at which this course is offered:	4 / 2
4. Course general Description	
This course covers several geometric systems including Euclidean, non-Euclidean, transformational, and projective. Other topics studied are topological properties and the relationship between coordinate and synthetic geometry.	
5. Pre-requirements for this course (if any): Analytic Geometry (231Math-3)	
6. Co- requirements for this course (if any):	
7. Course Main Objective(s)	
Be familiar with the differences between different forms of geometry, such as Euclidean, Hyperbolic and Projective.	

1. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1.	Traditional classroom	3	100%
2.	E-learning		
3.	Hybrid <ul style="list-style-type: none"> • Traditional classroom • E-learning 		
4.	Distance learning		

2. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	Lectures	45
2.	Laboratory/Studio	
3.	Field	
4.	Tutorial	
	Total	45





B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
1.0	Knowledge and understanding			
1.1	Recognize the basic notions of Euclidean and Non-Euclidean geometries, and in particular the problematic of the fifth axiom.	K1	Lecture Scientific discussions	Quiz Written Exam Homework
1.2	Recognize the notions of linear transformation.			
1.3	Explain some concepts and relations in plane and solid geometry.			
2.0	Skills			
2.1	Uses deductive axioms and logic to justify each step in the proof.	S2	Lecture Scientific discussions	Quiz Written Exam Homework
2.2	Prove some Hyperbolic theorems in geometry			
2.3	Distinguish between theorems of geometry without using parallel axiom and Euclidean geometry.	S4		
3.0	Values, autonomy, and responsibility			
3.1	develop personal values for ethical behavior	V1	Homework	Observation form Oral Test

C. Course Content

No	List of Topics	Contact Hours
1.	Euclid's Geometry: Logic and Incidence Geometry, Hilbert's Axioms.	9
2.	Axiomatic and Neutral Geometry: Axiomatic Geometry, Neutral Geometry, Euclidean Parallels.	12
3.	History of the Parallel Postulate, The Discovery of Non-Euclidean	3





	Geometry, Independence of the Parallel Postulate.	
4.	Solid Euclidean Geometry	6
5.	Hyperbolic Geometry	6
6.	Geometric Transformation	6
7.	Affine and projective and elliptic geometry	3
Total		45

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	First Exam	6-8	20
2.	Second Exam	11=13	20
3.	assignments and quizzes	During classes	10
4.	Final Exam	16-18	50

*Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.)

E. Learning Resources and Facilities

1. References and Learning Resources

Essential References	فالح بن عمران الدوسري، الهندسة الإقليدية واللاإقليدية، 2006، مكتبة الرشد.
Supportive References	Marvin Jay Greenberg, Euclidean and Non-Euclidean Geometries: Development and History 4 th , W. H. Freeman, 2010.
Electronic Materials	- What Are Euclidean and Non-Euclidean Geometry? https://www.quickanddirtytips.com/education/math/what-are-euclidean-and-non-euclidean-geometry
Other Learning Materials	

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms,	Lecture Hall by the number of seats = 25 seat approximately.



Items	Resources
simulation rooms, etc.)	
Technology equipment (projector, smart board, software)	<ul style="list-style-type: none"> • Data show • Smart Board • Wi Fi
Other equipment (depending on the nature of the specialty)	None

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Student	Student Questionnaire (Indirect)
Effectiveness of students assessment	Peer Reviewer	Rubrics (Indirect)
Quality of learning resources		
The extent to which CLOs have been achieved	Faculty	Direct
Other		

Assessor (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify))

Assessment Methods (Direct, Indirect)

G. Specification Approval Data

COUNCIL /COMMITTEE	Council of Mathematics Department
REFERENCE NO.	14441017-0208-00014
DATE	17-10-1444H

