هيئة تقويم التعليم
Education Evaluation Commission
المركز الوطني للتقويم والاعتماد الأكاديمي
National Center for Academic Accreditation and Evaluation

ATTACHMENT 5.

T6. COURSE SPECIFICATIONS (CS)

Foundations of Euclidean and Non-Euclidean Geometry

(MATH 379)

(A mandatory course)

هيئة تقويم التعليم
Education Evaluation Commission

Course Specifications

Institution : King Saud University1439H/2018G	Date of Report
College/Department College of science/Department of Mathematics	

A. Course Identification and General Information

1. Course title and code: Foundations of Euclidean and Non-Euclidean Geometry, MATH 379			
2. Credit hours4 (3+1+0)			
3. Program(s) in which the course is offered. (If general elective available in many programs indicate this rather than list programs) Bachelor of Science in Mathematics.			
4. Name of faculty member responsible for the course Prof. Mohammed Guediri / for males Dr. Liana Topan / for females			
5. Level/year at which this course is offered**:** level 6/fourth year			
6. Pre-requisites for this course (if any) MATH202 (Advanced integral and differential calculus) and MATH246 (Linear algebra)			
7. Co-requisites for this course (if any)			
8. Location if not on main campus			
9. Mode of Instruction (mark all that apply)			
a. Traditional classroom	X	What percentage?	100
b. Blended (traditional and online)		What percentage?	
c. e-learning		What percentage?	
d. Correspondence		What percentage?	
f. Other		What percentage?	
Comments:			

B Objectives

1. What is the main purpose for this course? • Introducing the concepts: Plane Euclidean Geometry, And Euclidean Group. • Introducing the concepts: Affine Transformations, and Affine Group. • Introducing the concepts: Projective Plane, and Projective Group. • Introducing the concepts: Hyperbolic Plane. • Introducing the concepts: Isometries of the Hyperbolic Plane.
2. Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field) • Several web sites are already exists concerning differential geometry, which are of great help in getting some lecture notes, examples and exercises. • Exercises were reviewed more often to add new exercises to help the student understand the concepts under consideration.

C. Course Description (Note: General description in the form to be used for the Bulletin or handbook should be attached)

1. Topics to be Covered

List of Topics	No. of Weeks	Contact Hours
The Euclidean plane E^2. Perpendicular and Parallel lines. Congruence and isometries. Symmetry groups.	3	15
Transformations in E^2: Reflections, Translations, and Rotations. The isometry group of E^2.	3	10
Affine transformations. The affine group $AF(2)$.	2	10
The projective plane P^2. Homogeneous coordinates. The projective group.	3	15
The hyperbolic plane H^2. Parallel and Perpendicular lines. Distance in H^2. Isometries of H^2.	3	15
Triangles in H^2 and hyperbolic trigonometry.	2	10

2. Course components (total contact hours and credits per semester):

		Lecture	Tutorial	Laboratory/ Studio	Practical	Other:	Total
Contact Hours	Planed	45	30	0	0	0	75
	Actual	45	30	0	0	0	75
Credit	Planed	3	1	0	0	0	4
	Actual	3	1	0	0	0	4

3. Additional private study/learning hours expected for students per week.
Studying and doing homework. 8

4. Course Learning Outcomes in NQF Domains of Learning and Alignment with Assessment Methods and Teaching Strategy

On the table below are the five NQF Learning Domains, numbered in the left column.

First, insert the suitable and measurable course learning outcomes required in the appropriate learning domains (see suggestions below the table). **Second**, insert supporting teaching strategies that fit and align with the assessment methods and intended learning outcomes. **Third**, insert appropriate assessment methods that accurately measure and evaluate the learning outcome. Each course learning outcomes, assessment method, and teaching strategy ought to reasonably fit and flow together as an integrated learning and teaching process. (Courses are not required to include learning outcomes from each domain.)

	NQF Learning Domains And Course Learning Outcomes	Course Teaching Strategies	Course Assessment Methods
1.0	**Knowledge**		
1.1	Recognize the basic notions of Euclidean and Non-Euclidean geometries.	At the beginning of studying each topic some examples will be laid out and discussed with the students encouraging them to derive the definitions of the concepts under consideration.	Hold Class discussion.
1.2	Recognize advanced (i.e. graduate) courses in differential geometry.	At the beginning of each lecture a discussion is conducted with the students about what have been done in the previous lecture in order to establish a link with the current lecture.	Two midterm Exams and a final Exam.
1.3	Recognize the concepts of distance and congruence.	Encouraging students to develop some examples and contribute to the discussion of the proofs of the theorems, propositions and lemmas.	Homework assignments.
1.4	Writegeometric problems (particularly, hyperbolic geometry) using techniques of linear algebra.	Reminding the students of what they already studied in related courses to show them how the new concepts make them understand the old concepts and how some of them are generalization of those concepts.	

2.0	**Cognitive Skills**		
2.1	Recognize the properties of the distance in the Euclidean plane. Recognize the notions of reflections, rotations, translations, and glide translations.	Discussion during lecture time.	Have discussions during lecture times and tutorial sessions.
2.2	Calculate the distance between a given point and a straight line.	Give extensive examples during lecture time. Give homework assignments.	Discuss the student's assignment.
2.2	Writethe symmetry group of a figure and explain whether two figures in the plane are congruent or not.	Give problem sheets to be discussed during tutorial sessions.	Have home works and discuss it with the students.
2.3	Recognize the notions of Projective and Hyperbolic planes, and calculate the hyperbolic distance between a given point and a line in the Hyperbolic plane.		Give quizzes, mid-term exams and final exam.
2.4	Recognize the notions of parallel and perpendicular lines in the Hyperbolic plane, and compare with those of the Euclidean plane.		
3.0	**Interpersonal Skills & Responsibility**		
3.1	Work as part of a team and independently.	Conducting group projects and writing group essays.	Group discussion.
3.2	Use different knowledge resources show the ability of using and managing time.	Group problems solving during tutorial.	Assessment of the project essays.
3.3	Evaluate results of work with others		Evaluate homework assignments.
4.0	**Communication, Information Technology, Numerical**		
4.1	Use the computer for graphing and viewing some symmetric and non-symmetric figures in the Euclidean plane.	Write project essays.	Evaluate the project essays.
4.2	Writing essays.	Incorporating the use and utilization of computer in the course requirements.	

5.0	**Psychomotor**		
5.1	Not applicable	Not applicable	Not applicable

5. Schedule of Assessment Tasks for Students During the Semester			
	Assessment task (e.g. essay, test, group project, examination, speech, oral presentation, etc.)	Week Due	Proportion of Total Assessment
1	First midterm exam	6	25%
2	Second midterm exam	12	25%
3	Quizzes and Short talk	During semester	10%
4	Final exam	16	40%

D. Student Academic Counseling and Support

1. Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week)

- Office hours: 6 hr/week
- Academic supervision: 5 hr/week

E. Learning Resources

1. List Required Textbooks

1. Euclidean and Non-Euclidean Geometry: An Analytic Approach, by Patrick J. Ryan, Cambridge University Press (1986).

2. List Essential References Materials (Journals, Reports, etc.)

1. 1. Introduction to Geometry, by H. S. M. Coxeter, Wiley (1989).

3. List Electronic Materials, Web Sites, Facebook, Twitter, etc. • Non-Euclidean Geometry, by H. S. M. Coxeter, Cambridge University Press (1998).
4. Other learning material such as computer-based programs/CD, professional standards or regulations and software. • Several web sites are already exists concerning Euclidean and Non-Euclidean Geometry, which are of great help in getting some lecture notes, examples and exercises. •
5. Other learning material such as computer-based programs/CD, professional standards or regulations and software. • Some computer software can be used to draw complicated symmetric and non-symmetric figures. We cite here Mathematica, Scientific-WorkPlace, and Maple.

F. Facilities Required

Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access etc.)
1. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.) • Lecture room to accommodate 30 students • Overhead projector for the use of computer.
2. Computing resources (AV, data show, Smart Board, software, etc.) • Computer lab with at least 30 internet point.
3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list) • Securing the text books in the university book stores. • Securing the book references in the university central libraries.

G Course Evaluation and Improvement Processes

1 Strategies for Obtaining Student Feedback on Effectiveness of Teaching • Through evaluating the midterm exams, quizzes, and final exam. • Dedicating last lecture for open discussion with the students about all aspects concerning the course.
2 Other Strategies for Evaluation of Teaching by the Program/Department Instructor • Give a questionnaire and analyzing the outcomes.

3 Processes for Improvement of Teaching • Through personal readings.
4. Processes for Verifying Standards of Student Achievement (e.g. check marking by an independent member teaching staff of a sample of student work, periodic exchange and remarking of tests or a sample of assignments with staff at another institution) • Check marking by an independent faculty member of a sample of student work. • Unified exams and common marking if there is more than one group
5 Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement. • Periodically reviewing terminology of the course, and reviewing the department plan in general in order to achieve the aims planed for the course.

Name of Course Instructor: **Malik Talbi**

Signature: _____ Date Specification Completed: **25/05/2018**

Program Coordinator: _____

Signature: _____ Date Received: _____