



# Course Specification

— (Bachelor)

Course Title: **Geometry**

Course Code: **2022103-3**

Program: **Bachelor in Mathematics.**

Department: **Mathematics and Statistics Department**

College: **Faculty of sciences**

Institution: **Taif university**

Version: **1**

Last Revision Date: **20/05/2023**



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## A. General information about the course:

### 1. Course Identification

1. Credit hours: 3(3,0,0 )

#### 2. Course type

A.  University  College  Department  Track  Others  
 B.  Required  Elective

3. Level/year at which this course is offered: ( Level 3 / Second year)

#### 4. Course general Description:

This course includes the following topics: conic sections (parabola- ellipse-hyperbola), Vectors in the space, Coordinate systems, Cartesian, Cylindrical, Spherical and polar Coordinates and its transformation from one to the other. Dot and Cross product of vectors in the space. Application of Dot and Cross Product. Straight-line in a space, Conical sections in space (parabola-ellipse- hyperbola), Sphere and Rotational surfaces, Solid Sections in the space.

#### 5. Pre-requirements for this course (if any):

Introduction to Mathematics (202112-3)

#### 6. Co -requirements for this course (if any):

None

#### 7. Course Main Objective(s):

The student will be taught as follows:

1. Introducing the concepts and importance of Geometry.
2. Describing basic Geometry and types for fundamental Geometry.

### 2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	3Hr /Week	100%
2	E-learning		
3	Hybrid		



No	Mode of Instruction	Contact Hours	Percentage
	<ul style="list-style-type: none"> <li>Traditional classroom</li> <li>E-learning</li> </ul>		
4	Distance learning		

### 3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	Lectures	45
2.	Laboratory/Studio	NA
3.	Field	NA
4.	Tutorial	NA
5.	Others (specify)	NA
<b>Total</b>		<b>45</b>

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

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
<b>1.0</b>	<b>Knowledge and understanding</b>			
1.1	Recognize conic sections in 2d, vectors- coordinates systems and types – coordinates system in apace.	K2	<ul style="list-style-type: none"> <li>Lectures</li> <li>Group discussions</li> </ul>	<ul style="list-style-type: none"> <li>Quizzes</li> <li>Assignments</li> </ul>
1.2	Identify Plane, Sphere and straight-line equation in a space and the relationship between them.	K2	<ul style="list-style-type: none"> <li>Lectures</li> <li>Group discussions</li> </ul>	<ul style="list-style-type: none"> <li>Exams</li> <li>Assignments</li> </ul>
...				
<b>2.0</b>	<b>Skills</b>			
2.1	Explain the types of the coordinate system, transformation of axis.	S5	<ul style="list-style-type: none"> <li>Interactive classes</li> <li>Group discussions</li> </ul>	<ul style="list-style-type: none"> <li>Quizzes</li> <li>Assignments</li> </ul>
2.2	Demonstrate performance of different Plane, Sphere and straight-line equation	S5	<ul style="list-style-type: none"> <li>Lectures</li> <li>Group discussions</li> </ul>	<ul style="list-style-type: none"> <li>Exams</li> <li>Quizzes</li> </ul>



Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
	in a space and the relationship between them.			
2.3	Apply the Canonical section and solid sections in the space.	S5	<ul style="list-style-type: none"> <li>Lectures</li> <li>Self-learning through the website</li> </ul>	<ul style="list-style-type: none"> <li>Exams</li> <li>Quizzes</li> <li>Assignments</li> </ul>
<b>3.0</b>	<b>Values, autonomy, and responsibility</b>			
3.1	Work effectively within groups and independently.	V1	<ul style="list-style-type: none"> <li>projects</li> </ul>	<ul style="list-style-type: none"> <li>Oral exams</li> </ul>

### C. Course Content

No	List of Topics	Contact Hours
1.	Classification of the 2 <sup>nd</sup> degree equations, transformation of axis	3
2.	Conic sections (parabola- ellipse)	3
3.	Conic sections (hyperbola)	3
4.	Cartesian Coordinates and polar Coordinate and Cylindrical Coordinate and Spherical Coordinate, Convert between the rectangular, cylindrical and spherical coordinate systems	3
5.	Vectors, Dot product, and application	3
6.	Plane and straight line equation in a space	3
7.	<b>First Midterm exam</b>	3
8.	The relationship between plane and straight line equation in a space	3
9.	Sphere and plane	3
10.	Relation between line and Plan and Sphere.	3
11.	Conical sections in space (parabola)	3
12.	Conical sections in space (ellipse).	3
13.	<b>Second Midterm exam</b>	3
14.	Conical sections in space (hyperbola)	3
15.	Rotational surfaces	3
<b>Total</b>		<b>45</b>



## D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Quizzes	Continuous Evaluation	10%
2.	Assignments, report	Continuous Evaluation	10%
3.	Midterm 1 Exam	8-9	15%
4.	Midterm 1 Exam	12-13	15%
5.	Final Exam	15-16	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

<b>Essential References</b>	Anton, Howard; Herr, Albert, Calculus with Analytic Geometry, 5th Edition, John Wiley & Sons, Inc., Hoboken, 7ed, NJ (1995). ISBN 10: 0471594954 ISBN 13: 9780471594956
<b>Supportive References</b>	P. R. Vittal "Geometry," Pearson India, 2013, ISBN: 9789332524361
<b>Electronic Materials</b>	Lectures available in Blackboard
<b>Other Learning Materials</b>	

### 2. Required Facilities and equipment

Items	Resources
<b>facilities</b> (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	Classrooms
<b>Technology equipment</b> (Projector, smart board, software)	Data show, Blackboard
<b>Other equipment</b> (Depending on the nature of the specialty)	None

## F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Students, Program Leader	Direct & Indirect
Effectiveness of Students assessment	Faculty, Program Leader	Direct





Assessment Areas/Issues	Assessor	Assessment Methods
Quality of learning resources	Students, Faculty	Indirect
The extent to which CLOs have been achieved	Faculty	Direct & Indirect
Other		

**Assessors** (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify))

**Assessment Methods** (Direct, Indirect)

### G. Specification Approval

<b>COUNCIL /COMMITTEE</b>	Department Council
<b>REFERENCE NO.</b>	11
<b>DATE</b>	12-7-1443 H

