



Course Specifications

Course Title:	Analytic Geometry
Course Code:	Math 261
Program:	Bachelor of Science in Mathematics
Department:	Mathematics
College:	Science
Institution:	University of Tabuk

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A. Course Identification

1. Credit hours: 03 Hours/Week
2. Course type
a. University <input type="checkbox"/> College <input type="checkbox"/> Department <input checked="" 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: L3/Y2
4. Pre-requisites for this course (if any): Math 101
5. Co-requisites for this course (if any): None

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	45	100%
2	Blended		
3	E-learning		
4	Distance learning		
5	Other		

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	Lecture	45
2	Laboratory/Studio	
3	Tutorial	
4	Others (specify)	
	Total	45

B. Course Objectives and Learning Outcomes

<p>1. Course Description:</p> <p>This course is designed to introduce students to Polar Coordinates, Vectors in the plane, and Cartesian coordinates and vectors in space, Scalar Products, the Cross Product, Lines and Planes in Space, Ellipse, Hyperbola, and Parabola, Polar Equation of Conic Sections and Integration in Polar coordinates</p>
<p>2. Course Main Objective:</p> <p>-Students will be able to recognize the importance of the analytic geometry and its applications in Physics, Astronomy and Engineering Science. -Students will demonstrate proficiency in solving physical problems..</p>

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	Knowledge and Understanding	
1.1	students will be able to recall conic sections, polar coordinates, cylindrical coordinates, spherical coordinates, and polar equations of conic sections.	K1
1.2	Students will be able to record equations of lines in space.	K2

CLOs		Aligned PLOs
2	Skills :	
2.1	Students will be able to perform the fundamental operations on vectors in space, determine equations of lines, and planes.	S3
2.2	Students will be able to find polar equations of lines, circles and conic sections.	S3
2.3	Students will be able to apply and use the theories in solving problems of different domains.	S3
3	Values:	
3.1	Students will take the responsibility to solve given assignments on their own and submit the solution on time.	V2

C. Course Content

No	List of Topics	Contact Hours
1	Polar Coordinates	3 Hrs
2	Vectors in the plane	3 Hrs
3	Cartesian coordinates and vectors in space	3 Hrs
4	Scalar Products, the Cross Product of Two Vectors in Space, The Triple Scalar	3 Hrs
5	Scalar Products, the Cross Product of Three Vectors in Space	3 Hrs
6	The Geometry of Euclidean, points and Coordinates, Angles and Lines, The Distance from a Point to a Line,	3 Hrs
6	Mid-Exam#1	
7	Eq. of Lines in Space	3 Hrs
8	Eq. of Planes in Space, Plane containing Three points, Angels between Planes.	3 Hrs
9	Circle	3 Hrs
10	Conic Section- Ellipse Hyperbola, and Parabola	6 Hrs
11	Mid-Exam#2	
12	Conics as a Quadratic Curve, Focal Properties of Conics	3 Hrs
13	Polar Equation of Conic Sections , Integration in Polar coordinates	3 Hrs
14,15	Applications	6 Hrs
Total		45 Hrs

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	Knowledge and Understanding		

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.1	students will be able to recall conic sections, polar coordinates, cylindrical coordinates, spherical coordinates, and polar equations of conic sections.	Introducing new ideas through case study Lectures Class Discussions	Quizzes I II Midterm Exams Final Exams Homework assignments.
1.2	Students will be able to record equations of lines in space.		
2.0	Skills		
2.1	Students will be able to perform the fundamental operations on vectors in space, determine equations of lines, and planes.	Lectures Class Discussions	Quizzes I II Midterm Exams Final Exams Homework assignments.
2.2	Students will be able to find polar equations of lines, circles and conic sections.		
2.3	Students will be able to apply and use the theories in solving problems of different domains.		
3.0	Values		
3.1	Students will take the responsibility to solve given assignments on their own and submit the solution on time.	Lectures Assign tasks	Quizzes Homework assignments.

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Home works and Assignments	Weekly basis	10%
2	First mid-term exam	5 th week	25%
3	Second mid-term exam	15 th week	25%
4	Final Exam	At End of Semester	40%

*Assessment task (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice :

Six office hours per week in the lecturer schedule.

F. Learning Resources and Facilities

1. Learning Resources

Required Textbooks	Roger Fenn, Geometry, Springer Undergraduate Mathematics Series, 2001
Essential References Materials	Calculus and Analytic Geometry, 9 th Ed. George B. Thomas, Ross L. Finney
Electronic Materials	None
Other Learning Materials	None

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	1.Lecture Room with max capacity of 30 students and equipped with White Board, Overhead projector and internet connection. 2.Library
Technology Resources (AV, data show, Smart Board, software, etc.)	Projectors
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	None

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching and assessment	Students	Direct and Indirect
Extent of achievement of course learning outcomes	Teachers	Direct
Quality of learning resources	Students	Indirect

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)

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

Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	Program and study plan committee
Reference No.	
Date	25/08/2021