Course Specifications

Course Title:	**Algebra and Analytic Geometry**
Course Code:	**MATH 2240**
Program:	**Bachelor of Science in Mathematics**
Department:	**Mathematics**
College:	**College of Science and Humanities Alkharj**
Institution:	**PRINCE SATTAM BIN ABDUALZIZ UNIVERSITY**

VISION 2030
المملكة العربية السعودية
KINGDOM OF SAUDI ARABIA

تميز NCSEE
مسار MASAR
اعتماد
قياس

www.etec.gov.sa

Table of Contents

A. Course Identification

1. Credit hours: 04	

2. Course type

a.	University	☐	College	☐	Department	✓	Others	☐
b.		Required	✓	Elective	☐			

3. Level/year at which this course is offered: Level 4

4. Pre-requisites for this course (if any)**:**

MAT 1060

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**	04 per week	100%
2	**Blended**		
3	**E-learning**		
4	**Distance learning**		
5	**Other**		

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	48
2	**Laboratory/Studio**	0
3	**Tutorial**	0
4	**Others** (specify) – (5 Office Hours in a week)	60
	Total	108

B. Course Objectives and Learning Outcomes

1. Course Description

Algebra: Introduction to mathematical logic:- statement, conjunction, dis-conjunction, conditional and bi-conditional statement, existential and universal quantifiers, negation, converse, inverse and contra positive, truth tables - Methods of proof -Set theory – Definition – Types of Sets – Operations on Sets - Concept of De Morgan's Laws-Power set- Cartesian product, ordered pairs and triples -Relations- Domain and Range of Relations- notions of reflexive, symmetric, transitive relations – equivalence relations- equivalence class- partition-quotient sets- orderings – partial and total orderings - - Mapping and functions – Different types of mappings – Domain and Range of Functions- composition of functions – Inverse of a mapping – composition of a mapping- Countable set, equivalents sets, cardinal number, finite and infinite sets.

Analytic Geometry **:**Straight line and circle - Conic Sections - General theory of second order curves, Simplifying the general second equation by translation and rotation, systems of coordinates

2. Course Main Objective

1- To make the students familiar with the elementary concepts of Logics and theory of Proofs, Sets and its operations, Relations and Functions. The course is also aimed to make the students thorough with elementary concepts of Analytic Geometry of 2 Dimension.

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)

Course will be reviewed based on the report received from Course Coordinators and curriculum review committee

3. Course Learning Outcomes

	CLOs	Aligned PLOs
1	**Knowledge and Understanding**	
1.1	Be familiar with concepts of Mathematical Logic, Truth Table	K2
1.2	Be conversant with Sets, their properties, operations, conic sections	K1
2	**Skills :**	
2.1	Formulate Truth Tables and perform logical operations	S1
2.2	Perform various operations of sets and evaluate the parts of conics	S2

C. Course Content

No	List of Topics	Contact Hours
1	Mathematical Logic and Various types of statements	6
2	Truth Tables	4
3	Methods of Proof	6
4	Sets and Operations	4
5	De Morgan's Laws , Cartesian Products	4
6	Relations and different types of relations	4
7	Functions, Domain, Range and types of functions	3
8	Review of basic Concepts of Analytic Geometry	3
9	Straight Lines	6
10	Circles	4
11	Conic Sections	4
Total		48

D. Teaching and Assessment

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

Code	Course Learning Outcomes	TeachingStrategies	AssessmentMethods
1.0	**Knowledge and Understanding**		
1.1	Be familiar with concepts of Mathematical Logic, Truth Table	1. Class Room Lectures	1. Two Internal Exams
1.2	Be conversant with Sets, their properties, operations, conic sections	2. Interactive sessions 3. Exclusive Office Hours for clearing doubts in small groups	2. At least two Quiz 3. End Semester Exam

Code	Course Learning Outcomes	TeachingStrategies	AssessmentMethods
2.0	**Skills**		
2.1	Formulate Truth Tables and perform logical operations	1. Application oriented exercises	1. Homework
2.2	Perform various operations of sets and evaluate the parts of conics	2. Homework to improve the analytical skills	2. Assignments 3. Quiz 4. Exams

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Mid Term Exam I	4	20%
2	Quiz	7 & 10	5%
3	Mid Term Exam II	9	20%
4	Continuous Assessment – Homework, Assignment, Attendance etc.	--	5%
5	End Semester Exam	13	50%

*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 :

1.   Exclusive Office Hours – 5 Hours per week
2.   Academic Advising for Students – 1 Hour per week

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	- Robert R Stoll - Set Theory and Logic - JP Jain - Text book Analytical Geometry of two dimension –, New Age International - Samuel Selby – Sets Relations and Functions – An introduction – 1963 - Jean Gallier – Discrete Mathematics - Springer
Essential References Materials	Paul's online series
Electronic Materials	
Other Learning Materials	Lecture Notes Prepared by the Department of Mathematics

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Classrooms with Smart boards with seating facilities for at least 30 students

Item	Resources
Technology Resources (AV, data show, Smart Board, software, etc.)	Smartboard, Internet Connection for Blackboard Computer Lab with software packages such as Excel etc.
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	Nil

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Course Evaluation	Quality Assurance Committee of the Department	Review all the course documents and course report
Peer Review	Senior Faculty Members / HoD	Attend the lecture and fill in a form
End Semester online survey	students	online survey

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes,Quality oflearning resources, etc.)
Evaluators (Students,Faculty, Program Leaders,Peer Reviewer, Others (specify)
Assessment Methods(Direct, Indirect)

H. Specification Approval Data

Council / Committee	
Reference No.	
Date	