Course Specification

(Bachelor)

Course Title:	General Mathematics
Course Code:	MATH102-4
Program:	B. Sc. in Mathematics
Department:	All Departments of Science College
College:	Science College
Institution:	Jazan University, Jazan
Version:	1st
Last Revision Date:	26 March 2024

Table of Contents

A. General information about the course:

1. Course Identification

1. Credit hours: (3+1)					
4					
2. Course type					
A.	☐University	☒ College	☐Department	☐Track	☐Others
B.	☒ Required		☐Elective		
3. Level/year at which this course is offered: (Level 1/Year 1)					
4. Course general Description:					
General Mathematics course acts as a prerequisite for calculus and cover advanced mathematical concepts based on quantitative reasoning and functions. General Mathematics course contents are the basic algebraic operations, equations and inequalities, functions, exponential, logarithmic and trigonometric functions, basic concepts and additional topics in analytic geometry, solving system of equations and matrices.					
5. Pre-requirements for this course (if any)**:**					
Non					
6. Co-requisites for this course (if any)**:**					
Non					
7. Course Main Objective(s):					
After finishing the course, the student is expected to be familiar with the following: • **Understand the basic rules of Real Numbers.** • **Solving linear Equations and Inequalities.** • **Understand the basic rules of Functions, Exponential, Logarithmic and Trigonometric Functions** • **Know the basic rules of Matrix Algebra and Solving System of Linear Equations** • **Understand additional topics in analytic geometry**					

2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	60	100
2	E-learning		
3	Hybrid • Traditional classroom		

No	Mode of Instruction	Contact Hours	Percentage
	• E-learning		
4	Distance learning		

3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	**Lectures**	45
2.	**Laboratory/Studio**	
3.	**Field**	
4.	**Tutorial**	15
5.	**Others (specify)**	
Total		60

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	Distinguishing mathematical concepts relevant to Basic Algebraic Operations, Equations and inequalities, Graphs, Functions and Trigonometric Identities.	K1	Lectures, Web based work, Classroom discussions.	Written exam (Problem solve, MCQ, true/false, Proof, Short answer), Quizzes, Assignments
1.2	Analysis structures and features of Mathematics problems in Basic Algebraic Operations, Equations and inequalities, Graphs, Functions and Trigonometric Identities.	K2	Lectures, Web based work, Classroom discussions.	Written exam (Problem solve, MCQ, true/false, Proof, Short answer), Quizzes, Assignments
1.3	Outline required notations and concepts in Basic Algebraic Operations, Equations and inequalities, Graphs, Functions and Trigonometric Identities.	K3	Lectures, Web based work, Classroom discussions.	Written exam (Problem solve, MCQ, true/false, Proof, Short

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
				answer), Quizzes, Assignments
2.0	Skills			
2.1	Apply aspects relevant to Basic Algebraic Operations, Equations and inequalities, Graphs, Functions and Trigonometric Identities.	S1	Lectures, problem solving, web based work, Classroom discussions	Written exam (Problem solve, MCQ, true/false, Proof, Short answer), Quizzes, Assignments
2.2	Apply how to compute rates/quantities and Approximate Solutions in Basic Algebraic Operations, Equations and inequalities, Graphs, Functions and Trigonometric Identities.	S2	Lectures, problem solving, web based work, Classroom discussions	Written exam (Problem solve, MCQ, true/false, Proof, Short answer), Quizzes, Assignments
2.3	Apply various math rules, techniques and theorems in Basic Algebraic Operations, Equations and inequalities, Graphs, Functions and Trigonometric Identities.	S3	Lectures, problem solving, web based work, Classroom discussions	Written exam (Problem solve, MCQ, true/false, Proof, Short answer), Quizzes, Assignments
2.4				
3.0	Values, autonomy, and responsibility			
3.1	Ability to work individually or within a team by independently and responsibility during group work and/or assignments.	V1	Group work, problem solving, web based work	Assignments
3.2				
3.3				

C. Course Content

No	List of Topics	Contact Hours	
		Lect.	Tut.
1.	**Basic Algebraic Operations:** 1. Algebra and Real Numbers 2. Exponents and Radicals 3. Polynomials 4. Factoring	8	2

	5. Rational Expressions		
2.	**Equations and Inequalities:** 1. Linear Equations and Applications 2. Linear Inequalities 3. Absolute Value in Equations and Inequalities 4. Complex Numbers 5. Quadratic Equations and Applications	8	3
3.	**Graphs:** 1. Cartesian coordinate Systems 2. Distance in the Plane 3. Equation of a Line 4. Parallel and Perpendicular lines 5. Equation of a Circles	8	3
4.	**Functions**: 1. Functions: Definition of Function 2. Properties of Functions 3. Operations on Functions; Composition 4. Exponential Functions 5. Logarithmic Functions 6. Exponential and Logarithmic Equations 7. Trigonometric Functions: A Unit Circle Approach, Solving Right Triangles 8. Properties of Trigonometric Functions 9. More General Trigonometric Functions	15	5
5.	**Trigonometric Identities:** 1. Basic Identities, Sum, Difference, and Co-function Identities 2. Double-Angle and Half-Angle Identities 3. Product–Sum and Sum–Product Identities 4. Trigonometric Equations	6	2
Total		45	15

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Homework and quiz.	3	5 %
2.	First exam.	7	20 %
3.	Second exam.	11	20 %
4.	Homework and quiz.	13	5 %
5.	Final exam.	15	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	Precalculus, Custom Edition,Barne, Ziegler and Bylenn.Complied by Samir H.Saker, McGraw Hill, (2009).
Supportive References	• Barnett-Ziegler-Byleen, Pre-calculus, custom edition, McGraw-Hill, ISBN 13: 9780390204172, King Saud University, complied by Samir H. Saker. • Calculus, H. Anton, 8th Edition, John Wiley and Sons, (2005). • Calculus, R. E. Larson, R. P. Hostetler, and B. H. Edwards, 7 Edition, Houghton MifflinCompany, (2002). • Calculus, G. B. Thomas, Early Transcendentals, 11 Edition, AdditionWesley, New York (2006). • Calculus, E. Swokowski, M. Olinic, and D. Pence, 6 Edition, PWS Publishing Company, (1994).
Electronic Materials	Web sites dedicated to differential and integration available on the internet
Other Learning Materials	

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	Classroom, Computer lab.
Technology equipment (projector, smart board, software)	Data show; Smart Board, Mathematics software.
Other equipment (depending on the nature of the specialty)	

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Students, Peer and program leader	Indirect (Course Evaluation Survey) - Indirect peer evaluation
Effectiveness of student's assessment	Students, Program assessment committee	Direct/ Indirect
Quality of learning resources	Students, Faculty members	Direct/ Indirect

Assessment Areas/Issues	Assessor	Assessment Methods
The extent to which CLOs have been achieved	Students, Faculty members	Indirect
Other		

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

Assessment Methods (Direct, Indirect)

G. Specification Approval

COUNCIL /COMMITTEE	Board of Mathematics Department
REFERENCE NO.	To be approved
DATE	2023