Course Specifications

Course Title:	**Pure Mathematics**
Course Code:	**101 Math**
Program:	**Mathematics**
Department:	**Mathematics**
College:	**Science**
Institution:	**Jazan University**

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A. Course Identification

1. Credit hours:	**3 Hours**
2. Course type	
a.	University ☐ College ☑ Department ☐ Others ☐
b.	Required ☑ Elective ☐
3. Level/year at which this course is offered:	**Level 1/Year 1**
4. Pre-requisites for this course (if any)**:**	**Non.**
5. Co-requisites for this course (if any)**:**	**Non.**

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	**Traditional classroom**	28	75%
2	**Blended**	9.5	25%
3	**E-learning**		
4	**Correspondence**		
5	**Other**		

7. Actual Learning Hours (based on academic semester)

No	Activity	Learning Hours
Contact Hours		
1	**Lecture**	**34.5**
2	**Laboratory/Studio**	
3	**Tutorial**	**3**
4	**Others** (specify)	
	Total	**37.5**
Other Learning Hours*		
1	**Study**	**35**
2	**Assignments**	**5**
3	**Library**	**5**
4	**Projects/Research Essays/Theses**	
5	**Others**: -Exam preparation (mid-1, mid-2, final) -Office hours	 **25** **5**
	Total	**75**
Grand Total		**112.5**

* The length of time that a learner takes to complete learning activities that lead to achievement of course learning outcomes, such as study time, homework assignments, projects, preparing presentations, library times

B. Course Objectives and Learning Outcomes

1. Course Description

This course is designed to provide students with

- **Basic Algebraic Operations:** The set of real numbers, Operation on real numbers, Exponents and Radicals, Integer exponents, Roots of real numbers, Rational exponents

and radicals, Simplifying radicals, Polynomials and Basic operations, Factoring

- **Equations and Inequalities:** Linear equations, Linear inequalities, Absolute value in equations and inequalities, Complex Numbers, Quadratic equation and application by (factoring -quadratic formula).
- **Graphs:** Cartesian coordinate systems, (reflection-symmetry), Distance in the plane, (distance-midpoint-circle), Equation of a line , Slope , Special forms of line, Parallel and perpendicular lines
- **Functions:** Definition of function , Domain , Even and odd function, Composition
- **System of Linear Equations:** Solving System of Linear Equations (Graphical, Substitution and Elimination).
- **Matrix:** Matrix operations (Equality, Addition Subtraction and Multiplication)
- **Solving System of Linear Equation by Gauss-Jordan method**

2. Course Main Objective

After finishing the course, the student is expected to be familiar with the following:

- Basic Algebraic Operations
- Equations and Inequalities
- Graphs
- Functions
- System of Linear Equations
- Matrix
- System of Linear Equation by Gauss-Jordan method

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	**Knowledge:**	
1.1	Distinguishing mathematical concepts relevant to Basic Algebraic Operations, Equations and inequalities, Graphs, Functions, System of Linear Equations, Matrix and System of Linear Equation by Gauss-Jordan method	K1
1.2	Analysis structures and features of Mathematics problems in Basic Algebraic Operations, Equations and inequalities, Graphs, Functions, System of Linear Equations, Matrix and System of Linear Equation by Gauss-Jordan method.	K2
1.3	Outline required notations and concepts in Basic Algebraic Operations, Equations and inequalities, Graphs, Functions, System of Linear Equations, Matrix and System of Linear Equation by Gauss-Jordan method	K3
2	**Skills :**	
2.1	Apply aspects relevant to Basic Algebraic Operations, Equations and inequalities, Graphs, Functions, System of Linear Equations, Matrix and System of Linear Equation by Gauss-Jordan method	S1
2.2	Apply how to compute rates/quantities and Approximate Solutions in Basic Algebraic Operations, Equations and inequalities, Graphs, Functions, System of Linear Equations, Matrix and System of Linear Equation by Gauss-Jordan method.	S2
2.3	Apply various math rules, techniques and theorems in Basic Algebraic Operations, Equations and inequalities, Graphs, Functions, System of Linear Equations, Matrix and System of Linear Equation by Gauss-Jordan method.	S3
2.4	Apply mathematical problems using critical thinking and problem solving in	S4

CLOs		Aligned PLOs
	in Basic Algebraic Operations, Equations and inequalities, Graphs, Functions, System of Linear Equations, Matrix and System of Linear Equation by Gauss-Jordan method.	
3	**Competence:**	
3.1	Ability to work individually or within a team by independently and responsibility during group work and/or assignments.	C1
3.2	Ability to practice mathematics knowledge and skills in different situations during interactive discussion, group assignments, and web-based activities.	C2
3.3	Ability to provide ethics and friendly-ship environment in the real life during class discussion, participation in college and university activities, and be members of department committees and college committees.	C3

C. Course Content

No	List of Topics	Contact Hours
1	Basic Algebraic Operations	12.5
2	Equations and Inequalities	12.5
3	Graphs	5
4	Functions	2.5
5	System of Linear Equations	2.5
6	Matrix and System of Linear Equation by Gauss-Jordan method	2.5
Total		37.5

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**		
1.1	Recognize the fundamental principles and theories of Basic Algebraic Operations, Equations and inequalities, Graphs, Functions, System of Linear Equations, Matrix and System of Linear Equation by Gauss-Jordan method	Lectures, Web based work, Classroom dissections.	Written exam (Problem solve, MCQ, true/false, Proof, Short answer), Quizzes, Assignments
1.2	Know and understand required notations, define the concepts, and state theories and hypothesis, of Basic Algebraic Operations, Equations and inequalities, Graphs, Functions, System of Linear Equations, Matrix and System of Linear Equation by Gauss-Jordan method.		
1.3	Outline required notations and concepts of Basic Algebraic Operations, Equations and inequalities, Graphs,		

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
	Functions, System of Linear Equations, Matrix and System of Linear Equation by Gauss-Jordan method.		
2.0	**Skills**		
2.1	Understand, Explain and interpret a general knowledge of Basic Algebraic Operations, Equations and inequalities, Graphs, Functions, System of Linear Equations, Matrix and System of Linear Equation by Gauss-Jordan method	Lectures, problem solving, web based work, Classroom dissections.	Written exam (Problem solve, MCQ, true/false, Proof, Short answer), Quizzes, Assignments
2.2	Write and analyze equation of the problems mathematically in Basic Algebraic Operations, Equations and inequalities, Graphs, Functions, System of Linear Equations, Matrix and System of Linear Equation by Gauss-Jordan method.		
2.3	Apply various math rules, techniques and theorems mathematically in Basic Algebraic Operations, Equations and inequalities, Graphs, Functions, System of Linear Equations, Matrix and System of Linear Equation by Gauss-Jordan method.		
2.4	Apply mathematical problems using critical thinking and problem mathematically in Basic Algebraic Operations, Equations and inequalities, Graphs, Functions, System of Linear Equations, Matrix and System of Linear Equation by Gauss-Jordan method.		
3.0	**Competence**		
3.1	Ability to work individually or within a team by independently and responsibility during group work and/or assignments.	Group work, problem solving, web based work	Assignments
3.2	Ability to practice mathematics knowledge and skills in different situations during interactive discussion, group assignments, and web-based activities.		
3.2	Ability to provide ethics and friendly-ship environment in the real life during class discussion, participation in college and university activities, and be members of department committees and college committees.		

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Homework	3	5%
2	First exam.	7	20%
3	Second exam.	13	20%
4	Homework	14	5%
5	Final exam.	16	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 :

Each group of students assigned to a member of staff who will be available for help and academic guidance office hours at specific hours on daily basis. At least be available 8 hours per week.

F. Learning Resources and Facilities

1. Learning Resources

Required Textbooks	Barnett-Ziegler-Byleen, Pre-calculus, custom edition, McGraw-Hill, ISBN 13: 9780390204172, King Saud University, complied by Samir H. Saker.
Essential References Materials	- Bittinger, Beecher, Ellenbogen, and Penna, College Algebra Graphs and Models, 2nd Editi Addison Wesley,(2001). - R. E. Larson, R. P. Hostetler, Algebra and Trigonometry, 6th Edition, Houghton Mifflin Company,(2004). - R. Aufmann, V. Barker, and R. Nation, College Algebra and Trigonometry, 4th Edition, Houghton Mifflin Company,(2003). Precalculus, Michael Sullivan, Pearson publication, 9th edition.
Electronic Materials	Web sites dedicated to General Mathematics
Other Learning Materials	

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Classroom, Computer Lab.
Technology Resources (AV, data show, Smart Board, software, etc.)	Data show; Smart Board, Mathematics software.
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching	Students, Peer and program leader	Indirect (Course Evaluation Survey)- Indirect peer evaluation
Assessment	Students, Program assessment committee	Direct/ Indirect
Extent of achievement of course learning outcomes	Instructor	Direct/Indirect
Quality of learning resources	Students, Faculty members	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	**Board Of Mathematics Department**
Reference No.	**6th Meeting Of The Board Of Mathematics Department 1440-1441**
Date	**30/03/1441 AH.; 27/11/2019 A. D.**