هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission

2023
TP-153

Course Specification
(Bachelor)

Course Title:	Introduction to mathematics - 2
Course Code:	Math-140-2
Program:	Preparatory Year
Department:	Basic Sciences
College:	Deanship of Preparatory Year
Institution:	Najran University
Version:	2023
Last Revision Date:	24 August 2023

Table of Contents

A. General information about the course:

1. Course Identification

1. Credit hours: (3)					
2. Course type					
A.	☐University	☐College	☐Department	☐Track	Others PY
B.	☒ Required		☐Elective		
3. Level/year at which this course is offered: (1 level)					
4. Course general Description:					
This course is designed to cover topics in Algebra enhanced with pre-algebra topics such as arithmetic, fractions, and word problems as need, Sets and Real Numbers, Exponents and Radicals, Rational Expressions, Linear Equations and Linear Inequalities in one variable, Equations and Inequalities Involving absolute Value, Quadratic Equations, Functions and graphs, polynomials and Rational Functions, Combining Functions, logarithmic Functions and Exponential Functions, Matrices and determinants, Systems of Linear equations, Arithmetic sequences and series and Geometric sequences and series.					
5. Pre-requirements for this course (if any)**:**					
None					
6. Pre-requirements for this course (if any)**:**					
None					
7. Course Main Objective(s):					
Students able to build strong and sound understanding of Pre-calculus as a solid foundation for subsequent courses in mathematics and other disciplines as well as for applying in the real life.					

2. Teaching mode (mark all that apply)

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

3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	**Lectures**	**30**
2.	**Laboratory/Studio**	
3.	**Field**	
4.	**Tutorial**	**15**
5.	**Others (specify)**	
Total		**45**

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	Describe the basic concepts (Definitions, properties and characterization) of Sets and Real numbers, Exponents and Radicals, Rational Expression, linear Equation, linear Inequality, , Equations and Inequalities involving absolute value, Quadratic equations, Function, polynomial and Rational Function, Combining Functions, Exponential Functions, logarithmic Function Matrices and determinants, Systems of Linear equations, Arithmetic sequences and series and Geometric sequences and series		-Lecture -Cooperative learning -Problem solving -Brain storming -Self-Learning	-Final Exam

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2.0	**Skills**			
2.1	Solve the: Linear equations, linear inequalities, linear equation involving absolute value, inequalities involving absolute value, quadratic equations, exponential equations and logarithmic equations, Systems of Linear equations.		-Lecture -Cooperative learning -Problem solving -Brain storming -Self-Learning	-Final Exam
2.2	Find the domain of: Polynomial function, rational function, non-rational function, square root function, cubic root function, exponential function, logarithmic function and composite function, the n^{th} term of arithmetic sequences and series. of geometric sequences and series.			
2.3	Apply the properties of exponential and logarithmic functions: (Rewrite and Expand the logarithmic expression), Find the intercepts of exponential function, logarithmic function and their composite. Use the change of base property of logarithms to evaluate the logarithm the partial n^{th} term of arithmetic sequences and series. of geometric sequences and series.			
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3.0	**Values, autonomy, and responsibility**			
3.1	Develop the ability and confidence necessary to solve mathematical problems.		* Lecture * Scientific discussions	Oral Exam
3.2	Self-learning, Work effectively independently and teamwork, competitions		* Lecture * Scientific discussions	Oral Exam-Rubrics
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C. Course Content

No	List of Topics	Contact Hours
1.	**Real Number System**	
1.1	Sets and Real Numbers.	3
1.2	Exponents and Radicals	3
1.3	Rational Expressions.	3
2	**Equations and Inequalities**	
2.1	Linear Equations and Applications.	2
2.2	Linear Inequalities	3
2.3	Equations and Inequalities Involving Absolute Value	3
2.4	Quadratic Equations and Applications.	2
4	**Function**	
4.1	Functions	3
4.2	Polynomials and Rational Functions	3
4.5	Combining Functions	3
5	**Exponential and Exponential**	2
5.1	Exponential Functions	
5.2	Logarithmic Functions	3
6	**Systems of Equations and Matrices**	
6.1	Matrices and Determinants	3
6.1	Systems of Linear Equations	3
8	**Sequences and Series**	
8.2	Arithmetic's Sequences and Series	3
8.3	Geometrics Sequences and Series	3
Total		**45**

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Midterm Exam	8^{th} -9^{th}	30
2.	Assignments & Quizzes	During classes	20
3.	Final Exam	At the end	50
			100

*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	• College Algebra with Trigonometry, 8e by Raymond Barnett Michael Ziegler Karl Byleen. • College Algebra and Trigonometry: Graphs and Models, by Raymond Barnett Michael Ziegler Karl Byleen. Pre-calculus: Graphs and Models, 3e by Raymond Barnett Michael Ziegler Karl Byleen David Sobecki
Supportive References	
Electronic Materials	• https://www.ck12.org/book/CK-12-Calculus-Concepts/section/1.7/ https://zr9558.files.wordpress.com/2013/10/thomas_-calculus.pdf
Other Learning Materials	

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	Classroom
Technology equipment (projector, smart board, software)	Data Show Free software as (Geogebra) https://www.geogebra.org/graphing
Other equipment (depending on the nature of the specialty)	

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Students	Questioner (Indirect)
Effectiveness of Students assessment	Lecturer	Software (Direct)
Quality of learning resources	all	Questioner (Indirect)
The extent to which CLOs have been achieved		
Other		

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

Assessment Methods (Direct, Indirect)

G. Specification Approval

COUNCIL /COMMITTEE	**Council of the Department**
REFERENCE NO.	**14450302-0532-00001**
DATE	**02\03\1445 - 17\9\2023**