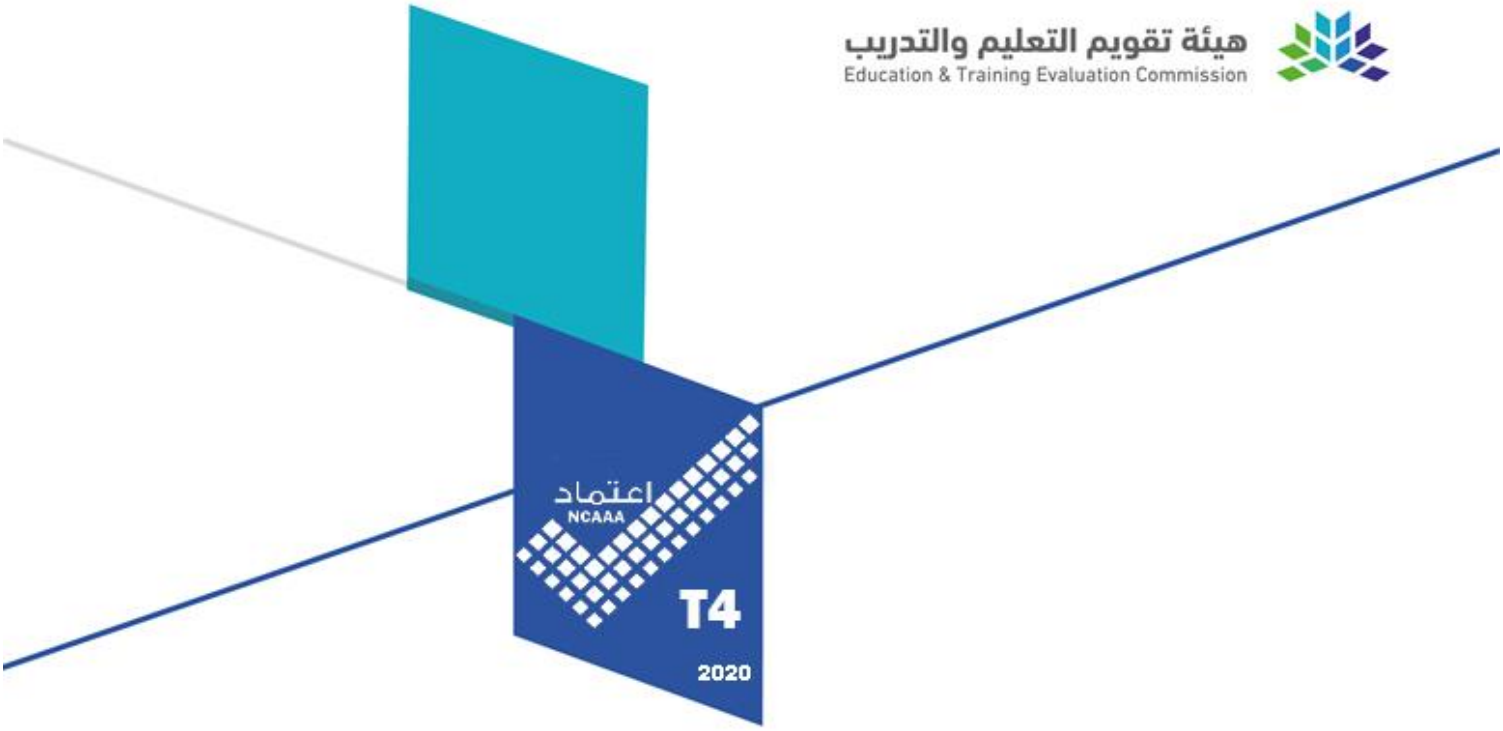
هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission



Course Specifications

Course Title:	Mathematics Basic
Course Code:	MTH 231
Program:	BS-Mathematics
Department:	Mathematics
College:	College of Sciences, AlZulfi
Institution:	Majmaah University, Saudi Arabia

Table of Contents

A. Course Identification

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

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	**Traditional classroom**	45	75%
2	**Blended**	0	0%
3	**E-learning**	0	0%
4	**Distance learning**	0	0%
5	**Other**	15	25%

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	45
2	**Laboratory/Studio**	0
3	**Tutorial**	0
4	**Others** (specify)	15
	Total	60

B. Course Objectives and Learning Outcomes

1. Course Description :

Review on common number sets ($\mathbb{N}, \mathbb{Z}, \mathbb{Q}, \mathbb{R}, \mathbb{C}$)- Equations of the first and second degree. Application to solve Inequalities and equations of degree great than 3- Mathematical Logic- Proof Methods, Mathematical Induction- Functions and their properties- Sets and their properties- Relations and their properties- Equivalence relation- Binary operations- Polynomials on the set of real numbers - Partial fractions

2. Course Main Objective

- To make a check up on the common number sets with a particular attention to the complex numbers
- Solve equations and apply them to study the sign of a polynomial with respect to the values of the variable. Learn the principal techniques to solve an equation of degree great than 3.
- Studying Introduction to Mathematical Logic
- Study the different Methods of proofs (contraposition, contradiction, case by case direct and Induction methods)
- Introduce the principal concepts of Set theory
- Binary operations
- Equivalence Relations and construct for a given equivalence relation its equivalence Classes
- Mappings are introduced and their principal properties are defined, and many examples are also introduced. (images and inverse images of a sets under mappings
- Countable and finite sets
- Studying the concepts of Binary operations-homeomorphisms-.
- The set of polynomials can be introduced without talking about the ring of polynomials.
- Many Calculus can be performed for partial fractions.

3. Course Learning Outcomes

	CLOs	Aligned PLOs
1	**Knowledge and Understanding**	
1.1	**Basic Number Set** What is set,? What is number sets **(**$\mathbb{N}, \mathbb{Z}, \mathbb{Q}, \mathbb{R}, \mathbb{C}$)-?	K1
1.2	**Equation & Inequality** What is Equation and Inequality? How to solve the equation and inequality?	K1
1.3	**Function & relation** What is function and relation? What is the difference in function and relation? How to find the domain and range by graph?	K4
1...		
2	**Skills :**	
2.1	**Solve** the Equation (first and 2nd order)	S1
2.2	**Understand** the concept of 1-1 and ont function, Inverse of the function	S4
2.3	**Understanding** of partial fraction and type	
2...		
3	**Values:**	
3.1	**Ability** to work in a team to understand the problem	C1
3.2		
3.3		
3...		

C. Course Content

No	List of Topics	Contact Hours
1	Review on common number sets ($\mathbb{N}, \mathbb{Z}, \mathbb{Q}, \mathbb{R}, \mathbb{C}$), Equations of the first and second degree.	12
2	Application to solve Inequalities and equations of degree great than 3	12
3	Mathematical Logic- Proof Methods, Mathematical Induction	8
4	Functions and their properties- Sets and their properties	12
5	Relations and their properties- Equivalence relation- Binary operations	8
6	Polynomials on the set of real numbers - Partial fractions	8
Total		60

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**		
1.1	**Basic Number Set** What is set,? What is number sets **(**$\mathbb{N}, \mathbb{Z}, \mathbb{Q}, \mathbb{R}, \mathbb{C}$)-?	• Lectures/Presentations • Media Lectures • Tutorials	• Exam • Assignment • Quiz • Final Exam
1.2	**Equation & Inequality** What is Equation and Inequality? How to solve the equation and inequality?	• Lectures/Presentations • Media Lectures • Tutorials	• Exam • Assignment • Quiz • Final Exam
1.3	**Function & relation** What is function and relation? What is the difference in function and relation? How to find the domain and range by graph?	• Lectures/Presentations • Media Lectures • Tutorials	• Exam • Assignment • Quiz • Final Exam
2.0	**Skills**		
2.1	**Solve** the Equation (first and 2nd order)	• Lectures/Presentations • Media Lectures • Tutorials	• Exam • Assignment • Quiz • Final Exam
2.2	**Understand** the concept of 1-1 and ont function, Inverse of the function	• Lectures/Presentations • Media Lectures • Tutorials	• Exam • Assignment • Quiz • Final Exam
2.3	**Understanding** of partial fraction and type	• Lectures/Presentations • Media Lectures • Tutorials	• Exam • Assignment • Quiz • Final Exam
3.0	**Values**		
3.1	**Ability** to work in a team to understand the problem	• Group discussion	• Exercise • Electronic MCQ Test
3.2			
…			

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Quiz 1	4th Week	2.5%
2	Assignment/Home Work 1	5th Week	2.5%
3	Mid Term 1	7th Week	20%
4	Quiz 2	9th Week	2.5%
5	Assignment /Home Work 2	10th Week	2.5%
6	Class Activities/Discussions	10th Week	5%
7	Mid Term 2	12th Week	20%
8	Electronic Test	13th Week	5%
9	Final Exam	---	40%
	Total		100%

***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 :

Department of mathematics has "**Student Academic Advisory Committee**". This committee is responsible for students counseling and advising works in synchronization and collaboration with the Deanship of Admissions and Registration and Student Affairs. Department of mathematics Alzulfi has a continuous and standardized procedure that be associated with the student's progress until completion of degree and includes psychological, social and behavioral guidance. This advisory committee also maintain the student's files. The students with GPA below than 50 % in Mid 1 and Mid 2 are stayed under serious observation and continuous consultations with respective course instructor about their performing. The course teacher will commit to a minimum scheduled time for student consultation equivalent to **2 HOURS PER WEEK**

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	1) Kenneth H. Rosen , Discrete Mathematics and Its Applications, WCB/Mc Graw-Hill, 2012 2) Rhonda Huetteenmuelle, Precalculus Demystified, Mc GrawHill , 2nd edition, 2012
Essential References Materials	**1)** Ron Larason, Pre-Calculus with limits, : A Graphing Approach, 2006
Electronic Materials	MIT Open Courses Khanacadmy
Other Learning Materials	

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	- The size of the room should be proportional to the number of students - Provide enough seats for students. - The number of students do not exceed on 30 in the classroom
Technology Resources (AV, data show, Smart Board, software, etc.)	- Mathematics Lab is equipped with a computer. - Provide overhead projectors and related items i.e smart Board, Wi-Fi, AV. - Updated Math Software i. e Mathematica, Matlab, Maple. etc
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 and assessment	Students/ internal committee	Direct (Students evaluation electronically organized by Deanship of registration and admission)/ Verification of students' papers
Extent of achievement of course learning outcomes	Staff members (Peer Reviewer)	Indirect (Frequent meetings consultation among the teaching staffs)
Quality of learning resources.	Staff members (course coordinators)	Direct (Meeting between course coordinators and the tutors)

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	Mathematics Department
Reference No.	27
Date	8/8/1442 H -21/3/2021 G

Head of Department

Dr. Muqrin Almuqrin