



Course Specification

(Bachelor)

Course Title: **Principels of Mathematics**

Course Code: **APOP1101**

Program: **Optician Diploma**

Department:

College: **Applied Collage**

Institution: **Umm Al-Qura University, Makkah, Saudi Arabia**

Version: **1**

Last Revision Date: **Jan-2025**

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A. General information about the course:

1. Course Identification

1. Credit hours: (2h)					
2 h					
2. Course type					
A.	<input type="checkbox"/> University	<input type="checkbox"/> College	<input checked="" type="checkbox"/> Department	<input type="checkbox"/> Track	<input type="checkbox"/> Others
B.	<input checked="" type="checkbox"/> Required		<input type="checkbox"/> Elective		
3. Level/year at which this course is offered: (1st level / 1st year)					
4. Course General Description:					
The course will cover: The polynomials and basic operations on them, solution of linear and quadratic equations in one variables, real number system and inequalities, the algebraic functions and their domains and graphical representation of them, the logarithmic and exponential functions, the trigonometric functions					
5. Pre-requirements for this course (if any):					
NA					
6. Co-requisites for this course (if any):					
NA					
7. Course Main Objective(s):					
Giving the student a sufficient information and skills that help in dealing with : The polynomials - Solution of some algebraic and non-algebraic equations – solving linear and non-linear inequalities-Some algebraic and non-algebraic functions Finding domains and ranges of functions					

2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	2	100
2	E-learning		
3	Hybrid <ul style="list-style-type: none"> Traditional classroom E-learning 		
4	Distance learning		

3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	Lectures	2*15
2.	Laboratory/Studio	





3.	Field	
4.	Tutorial	
5.	Others (specify)	
Total		30

B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
1.0	Knowledge and understanding At the end of this course the student will be able to :			
1.1	Recall laws, principles and fundamental concepts for specific core subject areas	K1	<ul style="list-style-type: none">• Lectures.• Brain storming.	<ul style="list-style-type: none">- Short quizzes- Assignments- Written exam
2.0	Skills At the end of this course the student will be able to :			
2.1	Perform different mathematical operation on Polynomials (adding – Multiplication – division – factorization)	S4	<ul style="list-style-type: none">• Lectures.• Solved examples• Whole group discussions	<ul style="list-style-type: none">- Short quizzes- Written exam- Homework assignments
2.2	Solve algebraic and some non-algebraic equations, linear and nonlinear inequalities	S4		
2.3	Evaluate domain and range for different types of functions	S4		
2.4	Represent graphically some algebraic and non –algebraic Functions	S4		
3.0	Values, autonomy, and responsibility At the end of this course the student will be able to :			
3.1	Manage self-learning by collecting and classifying information on a specific topic	V2	<ul style="list-style-type: none">• Small group work.• Research activities• Class Activities	<ul style="list-style-type: none">- Observations- Group assignments- Reports
3.2	Work cooperatively in a small group environment	V1		

C. Course Content

No	List of Topics	Contact Hours
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1.	The polynomials and basic operations on them :	8
	Definition and main properties (Algebraic and no algebraic terms- similar algebraic terms- Principle Coefficient – Degree of a polynomial)	
	Adding (subtracting) – Multiplying of Polynomials	
	Famous rules of multiplication - Division	
	Different methods of Factorization	
2.	Solution of algebraic equation	6
	Solution of linear equations in one variable – Absolute value equation	
	Solution of quadratic equations in one variables using (factorization – Square root – Completing square method)	
3.	Intervals and Inequalities	6
	Real number system.	
	Rule of inequalities and types of intervals	
	Inequalities (linear, absolute value, non-linear)	
4.	Functions and graphical representation of them:	10
	Concept of a function- Range and domain of a function	
	Odd and even functions - Absolute value function- Composition of functions	
	Graphical representation of a function	
	Famous Algebraic functions (Constant function -Polynomial functions - Fractional functions)	
	Non –algebraic functions (Exponential and logarithmic functions- Trigonometric functions)	30
	Solution of some non-algebraic equations	
Total		30

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Quizz 1	4	10
2.	Mid-Term Exam	8	20
3.	Quizz 2	10	10
4.	Assignments and report	Along the term	20
5.	Final Exam	16	40



*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	George B. Thomas JR., Ross L. Finney. "Calculus and Analytic Geometry" U.S.A., Addison Wesley Publishing Company, Inc. 1982 عون، فوزي. " حساب التفاضل والتكامل، المصفوفات والمتجهات ". دار الكتب العلمية للنشر والتوزيع. 1424 هـ (2002م)
Supportive References	Course notes on the university E-learning web-site
Electronic Materials	
Other Learning Materials	Presentations by the instructor are available on both the university E-learning web-site and the instructor YouTube channel

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	Classrooms,
Technology equipment (Projector, smart board, software)	Projector
Other equipment (Depending on the nature of the specialty)	

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Students	Direct: Questioner of course quality
Effectiveness of students' assessment	Peer reviewers	Direct: <ul style="list-style-type: none"> Random grading report Test Completion report for test Standards
Quality of learning resources	Students	Indirect: E-Survey of sufficiency of learning resources
The extent to which CLOs have been achieved	Instructor, Program leader and Course coordinator	Indirect: Check the results of quizzes, mid-term and final exams.
Other		

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





Assessment Methods (Direct, Indirect)

G. Specification Approval

COUNCIL /COMMITTEE	Umm Al-Qura University Council
REFERENCE NO.	851141114462/190386
DATE	1446/11/22

