Course Specifications

Course Title:	**Introduction to mathematics**
Course Code:	**202112-3**
Program:	**Bachelors in Food Science and Nutrition.**
Department:	**Department of Mathematics and Statistics**
College:	**Faculty of Sciences**
Institution:	**Taif University**

Table of Contents

A. Course Identification

1. Credit hours:	**Three Hours**

2. Course type

a.   University ☐   College √   Department ☐   Others ☐

b.   Required √   Elective ☐

3. Level/year at which this course is offered: 2nd level, 1st year

4. Pre-requisites for this course (if any)**:**

None

5. Co-requisites for this course (if any)**:**

None

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	**Traditional classroom**	**5Hr /Week**	**100%**
2	**Blended**		
3	**E-learning**		
4	**Distance learning**		
5	**Other**		

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	**50**
2	**Laboratory/Studio**	
3	**Tutorial**	
4	**Others** (specify)	
	Total	

B. Course Objectives and Learning Outcomes

1. Course Description

This course introduces a collection of several basic topics which serve in general the most courses of mathematics. This basic topics are: Linear equations and Inequalities, Mathematical Induction, The Binomial Theorem, Partial Fractions, The Theory of Equations, relations and functions-combination of functions – composition of functions, inverse function and exponential and Logarithmic Functions, an Introduction to Analytic Geometry.

2. Course Main Objective

This course is designed mainly for the students majoring in mathematics. The student will be taught as follows:

1-Knowing the Theory of Equations, Binomial theorem, Partial fraction and mathematical induction and other relevant subjects to complement the core for their future courses.

2- Studying the straight lines, curves and circle.

3. Course Learning Outcomes

	CLOs	Aligned PLOs
1	**Knowledge and Understanding**	
1.1	outline exponential and Logarithmic Functions.	K1
1.2	Recognize simplification of mathematical expressions	K1
2	**Skills :**	
2.1	Demonstrate different mathematical tools in mathematics.	S1
2.2	Plan polynomial equations using the Rational Root Theorem, the generation of binomial theorem, partial fraction decomposition	S1
3	**Values:**	
3.1	Work effectively within groups and independently.	**V1**
3.2	Demonstrate act responsibility and ethically in conducting their work	**V3**

C. Course Content

No	List of Topics	Contact Hours
1	Linear equation and linear inequalities: properties of inequality in R – solution of linear equation - properties of inequality in R –Real intervals – solution of inequality – absolute value of a real number – absolute value equations and inequalities	**5**
2	The Theory of Equations: general 2nd order equation, higher order equations, polynomial, Division Algorithm – synthetic division – Evaluating polynomial functions using the Remainder Theorem.	**5**
3	Factor Theorem-Finding zeros of polynomial functions — Rational Zeros Theorem – Fundamental Theorem of Algebra. Complex conjugate Theorem –Descartes' Rule of signs.	**5**
4	The Binomial Theorem: n-Factorial - Binomial coefficient – Binomial Theorem – Pascal's Triangle - k^{th} Term of Binomial expansion**.**	**5**
5	**1st Midterm exam,** Mathematical Induction: Principle of mathematical induction – proving statements – Generalized Principle of mathematical induction**.**	**5**
6	Partial Fractions: dividing polynomials by a polynomial – proper fraction – decomposition of rational expressions – distinct linear factors – repeated linear factors – distinct linear and quadratic factors	**5**
7	Repeated quadratic factors. Relations and functions-combination of functions – composition of the functions, inverse function.	**5**
8	Exponential Functions- Logarithmic Functions**. & 2nd Midterm exam.**	**5**
9	Introduction to Analytic Geometry: Ordered pairs – The Rectangular Coordinate system – The Distance Formula – Midpoint Formula – The Slope of a line.	**5**
10	Equations of lines (Point-slope form , slope-intercept form) – Equations Parallel lines – perpendicular lines. **Equation of the Circle**	**5**
	Total	**50**

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	outline exponential and Logarithmic Functions.	● Lectures ● Self-learning through the website	● Quizzes
1.2	Recognize simplification of mathematical expressions	● Lectures ● Group discussions	● Exams ●
2.0	**Skills**		
2.1	demostarte different mathematical tools in mathematics.	● Problem based learning Lectures	● Assignments
2.2	Plan polynomial equations using the Rational Root Theorem, the generation of binomial theorem, partial fraction decomposition	● Lectures ● Self-learning through the website	● Exams
3.0	**Values**		
3.1	Work effectively within groups and independently.	Projects.	Through the oral presentation of the projects.
3.2	Demonstrate act responsibility and ethically in conducting their work	● Lectures	● Assignments

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	**Quizzes + Home works**	**Continues**	**10 %**
2	**Midterm exam 1**	**5th**	**20 %**
3	**Midterm exam 2**	**8th**	**20 %**
4	**Final exam**	**11th**	**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 :
6 hours per week (as defined in the teaching schedule of the faculty member) for academic advice and consultations.
Teaching staff is also available using Blackboard web site and Taif University "Edugate" System.

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	1- Lial, Hornsby, and Schneider; College Algebra and Trigonometry, (3ed),Addison Wesley,2005.

	2- R.N.Aufmann, V. C. Barker, R.D. Nation; College Algebra and Trigonometry, (7ed), BROOKS/COLE,2011.
Essential References Materials	J. Stewart , (2012), Calculus: Early Transcendentals,7th edition, USA, Brooks/Cole.
Electronic Materials	**https://theswissbay.ch/pdf/Gentoomen%20Library/Maths/Calcul us/Calculus%20-%20J.%20Stewart.pdf**
Other Learning Materials	**Black Board system**

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	**Lecture halls, containing white boards, and electronic monitors - The seats fit the number of students - Laboratories equipped with suitable numbers of computers**
Technology Resources (AV, data show, Smart Board, software, etc.)	**Data show and Smart Board**
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	**Wi-Fi internet connections**

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching and assessment	Students	Indirect
Quality of learning resources	Peer Reviewer Students	Direct Indirect
Extent of achieving the course learning outcomes	Peer Reviewer Students	Direct 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	**Department of Mathematics and Statistics**
Reference No.	**11**
Date	**18-8-1443 H**

قسم الرياضيات والإحصاء
Mathematics and Statistics Department
جامعة الطائف
TAIF UNIVERSITY