هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission

T-104
2022

Course Specification

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Course Specification

Course Title:	General Math
Course Code:	MATH100
Program:	**Business Intelligence and Data Analysis**
Department:	Computer
College:	Applied College
Institution:	Najran University
Version:	**1**
Last Revision Date:	**15/12/1445H**

Table of Contents:

A. General information about the course:

Course Identification					
1. Credit hours:	3 hours				
2. Course type					
a.	University ☐	College ☐	Department☒	Track☐	Others☐
b.	Required ☒	Elective☐			
3. Level/year at which this course is offered:	1st Year, Term 3				
4. Course general Description This course helps students understand the concepts and techniques of numbers, algebra, trigonometry, engineering mathematics, sequences, finance, networks, decision mathematics, and statistics for solving applied problems. Additionally, it introduces the mathematical concepts used in cybersecurity					
5. Pre-requirements for this course (if any): N/A					
6. Co- requirements for this course (if any): N/A					
7. Course Main Objective(s) This course is designed to help students develop advanced algebra skills to a significant depth					

1. Teaching mode (**mark all that apply)**

No	Mode of Instruction	Contact Hours	Percentage
1.	Traditional classroom	48	100
2.	Blended		
3.	E-learning		
4.	Distance learning		
5.	Other		

2. Contact Hours **(based on the academic semester)**

No	Activity	Contact Hours
1.	Lectures	24
2.	Laboratory/Studio	24
3.	Tutorial	
4.	Others (specify)	
	Total	48

B. Course Objectives and Learning Outcomes

1. Course Description

This course helps students understand the concepts and techniques of numbers, algebra, trigonometry, engineering mathematics, sequences, finance, networks, decision mathematics, and statistics for solving applied problems. Additionally, it introduces the mathematical concepts used in cybersecurity

2. Course Main Objective

This course is designed to help students develop advanced algebra skills to a significant depth

3. Course Learning Outcomes

Code	CLOs	Aligned PLOs
1	The ability to use and apply the definitions and fundamental properties of sets, relations, the real number system, integers, and exponents.	
2	Acquiring a deep understanding of quadratic equations, polynomials, globalization, two-dimensional coordinate systems, graphs, exponential and logarithmic functions, matrices, and determinants.	
3	Explore how to apply number theory, coding theory, and encryption in the field of information security.	
4	Understanding the system of real numbers, integers, fractions, and mastering polynomials analysis and operations on them, as well as developing the skill of analyzing polynomials.	
5	understand the two-dimensional coordinate system and how to find distances between points, as well as the ability to create graphics.	
6	Understand inverse, exponential, and logarithmic functions, as well as the skill of producing graphical representations, especially in the logarithmic scale, and extracting information from graphs.	
7	Adhere to cybersecurity ethics	
8	Demonstrate professionalism	
9	Communicate effectively with a range of audiences	
10	Demonstrate teamwork	
11	Think critically and creatively	
12	Demonstrate responsible citizenship	

C. Course Content

No	List of Topics	Contact Hours
1.	Fundamental properties of sets and relations	1
2.	Properties and operations of the real number system	2
3.	Exponents and their applications in mathematical operations	3
4.	Quadratic equations and their solutions	3
5.	Polynomial functions and their analysis	3
6.	Inverse functions and their properties	3

7.	Two-dimensional coordinate systems and their applications	3
8.	Exponential functions and their properties	3
9.	Logarithmic functions and their applications	4
10.	Matrices and their operations	4
11.	Determinants and their role in solving systems of equations	4
12.	Introduction to encryption techniques in information security	4
13.	Analyzing and interpreting polynomial functions	4
14.	Advanced graphical representations, including logarithmic scale graphs	4
15.	Extracting information from graphs using inverse, exponential, and logarithmic functions	3
Total		48

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	Define the absolute value	Reading Presentation Class Discussion Internet research	Quiz
1.2	Recognize complex numbers	Reading Presentation Class Discussion Internet research	Quiz
1.3	Recall the definition of a function, elementary functions such as quadratic, trigonometric, exponential, logarithmic and their graphs	Reading Presentation Class Discussion Internet research	Quiz
2.0	Cognitive Skills		
2.1	Evaluate absolute-value equations and absolute-value inequalities;	Reading Presentation Class Discussion Lab Activities	Exam Lab Activities
2.2	Evaluate operations on functions such as: composition, difference quotients, inverse	Reading Presentation Class Discussion Lab Activities	Exam Lab Activities
2.3	Create graphical representations of equations,	Reading Presentation	Exam Lab Activities

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
	such as: absolute value, quadratic, radical, exponential and logarithmic	Class Discussion Lab Activities	
2.4	Evaluate limits of single variable functions graphically and computationally.	Reading Presentation Class Discussion Lab Activities	Exam Lab Activities
3.0	Interpersonal Skills & Responsibility		
3.1	Demonstrate responsibility to solve given assignments on their own and submit the solution on time.	Case Study Problems	Exam Case Study Problem
3.2	illustrate the basic concepts of precalculus such as: functions and limits	Group Project Case Study Problems	Exam Case Study Problem
4.0	Communication, Information Technology, Numerical		
4.1	Interpret functions and their graphs, limit of a single valued function,	Case Study Problems	Exam Case Study Problem

2. Assessment Tasks for Students

No	Assessment Activities *	Week Due	Percentage of Total Assessment Score
1.	Mid Exam	8	20%
2.	Homework's and Quizzes	3 to 14	10%
3.	Practical exam	14	20%
... 4	Final exam	16	50%

*Assessment Activities (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:

- Faculty Ofice Hours
- Advisor Appointment

F. Learning Resources and Facilities

1. Learning Resources

Required Textbooks	(H. Anton, I. Bivens, and S. Davis. Calculus, 8th Edition. John Wiley and Sons, 2005)
Essential References Materials	• James Stewart. Calculus Early Transcendental, 5th edition. Thomson, (2003).

	•R. Larson, R. Hostetler, and B. Edwards. Calculus, 7th edition . Houghton Mifflin Company, (2002).
Electronic Materials	
Other Learning Materials	

2. Facilities Required

Items	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	To maintain a very high standard of safety and security arrangements. Providing the students with healthy educational environment with all possible latest and essential educational equipment's and supplies: •Lecture room with 25 to 30 student accommodation •Computer Lab with all its essentials accommodates 25 to 30 students •For the higher number of students, seminar rooms are used which can accommodate up-to 200 student time
Technology Resources (AV, data show, Smart Board, software, etc.)	To use enough resources to ensure that the latest technology is used and thus modiications,improvements, updating, and replacements are commonplace to stay compatible. College have following facilities: •Each lecture room is equipped with the latest computers and computing devices including projectors and remote-control screens. •All the information technology laboratory rooms have computers for every student. •Each faculty member is also provided with laptop (If Possible)
Other Resources (Specify, e.g. if speciic laboratory equipment is required, list requirements or attach a list)	Access to Windows and Linux environments

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching	Students, External reviewers`visit from Accreditation Agency	Survey Formal Classroom Observation
Effectiveness of teaching and assessment	Quality and Development Unit, Curriculum Committee,	Teachers`feedback, Students`feedback, Course report, Professional certiications achievement rate
Achievement of Course Learning Outcomes	Quality and Development Unit	Course report, data analysis of achievement test
Quality of learning resources	Quality and Development Unit	Annual quality improvement program review
Other		

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	EXECUTIVE COUNCIL OF THE APPLIED COLLAGE
REFERENCE NO.	EIGHTH SESSION (4500087601)
DATE	26/12/1445 H