Course Description

This course description provides a necessary summary of the most important characteristics of the course and the learning outcomes expected of the student to achieve, demonstrating whether he or she has made the most of the available learning opportunities. They must be linked to the description of the programme.

1. Educational Institution	Shatt Al , Arab University College
2. Scientific Department / Center	Computer Technology Engineering
3. Course name/code	FUND 9101/ Math I
4. Available forms of attendance	(Electronic/Attendance) Three hours a week
5. Semester/Year	Biannual
6. Number of study hours (total)	90 hours
7. Date of preparation of this description	11/7/2022
8. Course Objectives	
Preparing a conscious generation that possesses abundant information in mathematics capable of solving complex mathematical laws useful in engineering in general and in electronic circuits	

Finding solutions to complex differential equations by using more than one method of solving

9. Course Outcomes and Teaching Methods, Learning and Assessment
A. Cognitive Objectives A1 - Knowledge of the basics of mathematics and distinguish the basic principles of states and their goals. A2. Solution of derivatives and knowledge of their applications A3- Calculus solution and knowledge of methods for solution A4. Fundamentals of Matrices A5. Solving linear equations A6. Use of linear equations in solving matrices
B. Skills objectives of the course B1 – Identify mathematical problems and determine how to solve B2 – Application of mathematical analysis and the use of the basics of mathematics for the solution B3 – Analysis of the results and their interpretation using evidence and fundamentals of mathematics B4- Linking the theoretical aspect with discussions and how to use mathematical laws and rules to solve complex mathematical problems
Teaching and learning methods
Lectures Discussions between different student groups on the application of theories to solve mathematical problems Create workshops and theoretical presentation on how to use the basics of mathematics to limit simple and complex electrical and electronic circuits Use multiple means to increase understanding and clarification Discussions and extracurricular assignments to increase understanding of mathematical and applied examples used in applications and electronic circuits
Evaluation Methods
Quarterly exams Quizzes Other extra-curricular tests

C. Emotional and Ethical Objectives
A1 - Promote thinking and cultivateethical responsibility to learn and think about a set of protective solutions to solve mathematical problems and how to analyze electronic circuits
C2 - Develop the thinking strategy of the student to analyze electronic circuits in different forms
C3. Self-esteem and self-esteem through meaningful discussions
C4 - Develop the strategy of developing the correct mathematical proofs to prove the validity of solutions and their shortness and how to solve in a simple way so that electronic circuits can be made effective and do not need unavailable resources

Teaching and learning methods
Quarterly and final exams where the total of the first and second semester (40 degrees) while the final exam is (60 degrees)

Evaluation Methods
Tests of various kinds Duties Learning matrix by presenting the results and discussing them with the participants in the discussion Reports & Studies

d. General and qualifying skills transferred (other skills related to employability and personal development).
D1 - Communication skills and put forward mathematical ideas and various solutions in a civilized form away from intolerance
D2 - Analysis, investigation and comparison to reach a conclusion through the evidence of the sport
D3 - Flexibility in dealing and respect for time
D4. Teamwork

10.Course Structure

Al , Week	Hours	Required Learning Outcomes	Name of the unit and/or subject	Method of education	Evaluation Method
1			Matrices, Determinants & Grammar's Rule.	Lectures	
2			Matrices, Determinants & Grammar's Rule.	Lectures	
3			Matrices, Determinants & Grammar's Rule.	Lectures	
4			Scalars + Vectors, Component of Vector,	Lectures + Case Study	
5			Vector Algebra, Dot Product, Orthogonal Vectors,	Lectures	
6			Cross Product, Vector Calculus	Lectures	
7			Limits, Theory of Derivative & Chain Rule. Derivative of Trigonometric Function	Lectures	
8			Limits, Theory of Derivative & Chain Rule. Derivative of Trigonometric Function	Lectures	
9			Limits, Theory of Derivative & Chain Rule. Derivative of Trigonometric Function	Lectures	
10			Inverse Trigonometric Functions. Exponential Function Derivative. Inverse Trigonometric Functions.	Lectures + Case Study	
11	3 hours per week	Concept and importance	Inverse Trigonometric Functions. Exponential Function Derivative. Inverse Trigonometric Functions.	Lectures	Different Evaluation According to Evaluation Methods
12			Inverse Trigonometric Functions. Exponential Function Derivative. Inverse Trigonometric Functions.	Lectures	
13			Derivative of Logarithmic Function Derivative of Logarithmic Function, Applications.	Lectures	
14			Derivative of Logarithmic Function Derivative of Logarithmic Function, Applications.	Lectures	
15			Derivative of Logarithmic Function Derivative of Logarithmic Function, Applications.	Lectures	
16			Derivatives of Hyperbolic Function The Inverse of Hyperbolic Functions, Application of Differentiation	Lectures	
17			Derivatives of Hyperbolic Function The Inverse of Hyperbolic Functions,	Lectures	

			Application of Differentiation		
18			Derivatives of Hyperbolic Function The Inverse of Hyperbolic Functions, Application of Differentiation	Lectures	
19			Theory of Integration (Area Problems) The Definite + Indefinite Integrals Integral of Trigonometric Functions Integral of Inverse Trigonometric Functions.	Lectures	
20			Theory of Integration (Area Problems) The Definite + Indefinite Integrals Integral of Trigonometric Functions Integral of Inverse Trigonometric Functions.	Lectures	
21			Theory of Integration (Area Problems) The Definite + Indefinite Integrals Integral of Trigonometric Functions Integral of Inverse Trigonometric Functions.	Lectures	
22			Theory of Integration (Area Problems) The Definite + Indefinite Integrals Integral of Trigonometric Functions Integral of Inverse Trigonometric Functions.	Lectures	
23			Integral of Exponential Functions Integral of Logarithmic Functions Integration by Parts	Lectures + Case Study	
24			Integral of Exponential Functions Integral of Logarithmic Functions Integration by Parts	Lectures	
25			Integral of Exponential Functions Integral of Logarithmic Functions Integration by Parts	Lectures	
26			Integral of Exponential Functions Integral of Logarithmic Functions Integration by Parts	Lectures	
27			Application of Definite Integrals (Area) Volumes & Length of Plane Curve. Application of Approximation	Lectures	
28			Application of Definite Integrals (Area) Volumes & Length of Plane Curve. Application of Approximation	Lectures	
29			Application of Definite Integrals (Area) Volumes & Length of Plane Curve. Application of Approximation	Lectures	
30			Application of Definite Integrals (Area) Volumes & Length of Plane Curve. Application of Approximation	Lectures	

1. Infrastructure	
1- Required textbooks	Thomas, Calculus by Anton , Bivens and Davis
2- Key References (Sources)	Calculus I.Advanced Engineering Mathematics by Alan Jeffrey.
A) Recommended books and references (scientific journals, reports, ...)	
B) Electronic References, Web Sites, ...	Engineering Mathematics tutorials

2. Course Development Plan
Add vocabulary to the curricula within the development of the course and by more than 5%
Add new and up-to-date sources
Include blended learning and increase the number of hours of the curriculum
Add a number of extra-curricular hours