Course Description Sample

Subject: Math I

This course description provides a brief survey of the most important characteristics, expected learning output, showing whether students have made full use f the learning opportunities. These characteristics have to be matched with the description of the program.

1. Educational Institution	Shatt Al , Arab University College
2. Department / Center	Computer Technology Engineering
3. Course Title /Code	FUND 9101/ Math I
4. Type of Teaching	(Electronic/Attendance) Three hours a week
5. Academic Year /Term	Biannual
6. Total No. of Teaching Hours	90 hours
7. Date f Preparing this Course Description	11/7/2022

9. 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

10. Course Output, Methodology and Evaluation

(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

(B) **Skill Objectives Related to the Program**:

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

Methods of Teaching and Learning

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

Methods of Evaluation

Quarterly exams
Quizzes

Other extra-curricular tests

(C) **Sentimental and Value 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

Methods of Teaching and Learning

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

Methods of Evaluation

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 Qualitative Skills (other skills related to the ability of employment 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
and personal development).

11. **Course Structure**

AI , Week	Hours	Required Learning Outcomes	Name of the unit and/or subject	Method of education	Evaluation Method
1	3 hours per week	Concept and importance	Matrices, Determinants & Grammar's Rule.	Lectures	Different Evaluation According to Evaluation Methods
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			Inverse Trigonometric Functions. Exponential Function Derivative. Inverse Trigonometric Functions.	Lectures	
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, Application of Differentiation	Lectures	
18			Derivatives of Hyperbolic Function	Lectures	

			The Inverse of Hyperbolic Functions, Application of Differentiation		
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 | |

12.**Infrastructure**

1- Required textbooks	Thomas, Calculus by Anton , Bivens and Davis
2- Key References (Sources)	Calculus I.Advanced Engineering Mathematics by Alan Jeffrey.

أ) Recommended books and references (scientific journals, reports, ...)	
ب) Electronic References, Web Sites, ...	Engineering Mathematics tutorials

13. **The Plan of Improving the Course**

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