Ministry of Higher Education and Scientific Research

Supervision and Scientific Evaluation Body

Quality Assurance and Academic Accreditation Office

Course Description Sample

Subject: Mathematics

1. Educational Institution	**Shatt Al Arab University College**
2. Department / Center	**Power Mechanic Technology Engineering**
3. Course Title /Code	**Mathematics / MPAC100**
4. Lecturer Name	**Dr. Jawad Mahmoud Jassim**
5. Type of Teaching	**Daily**
6. Academic Year /Term	**2023 – 2024 / 1st Semester**
7. Total No. of Teaching Hours	**90**
8. Date f Preparing this Course Description	**20/11/2023**

9. Course Objectives

1: Determinants and its Applications.
2: Vectors and Operations on Vectors.
3: Transcendental Functions.
4: Limits of Functions.
5: Rules of Derivatives.
6: Indefinite and Definite Integrals.
7: Applications of Indefinite Integrals.

10. Course Output, Methodology and Evaluation

(A) **Cognitive Objectives**

1: The ability to analyze problems using high skills.
2: The ability to process information.
3: Ability to understand graphs and collect information.
4: The ability to acquire new knowledge.
5: Ability to learn from experiences, innovations and new solutions.
6: The ability to express sound opinions and make appropriate decisions.

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

1: The student learns to calculate determinants and their applications.
2: The student learns vectors and operations on them.
3: The student learns the properties of transcendental functions.
4: The student learns to calculate the limits of algebraic functions and trigonometric functions.
5: The student learns to find the derivatives of algebraic functions and transcendental functions.
6: The student learns to find the definite integral and indefinite integral of algebraic functions and transcendental functions.

Methods of Teaching and Learning

1: Lectures.
2: Solving applied external exercises for each subject.
3: Tutorial

Methods of Evaluation

Number	calendar element	degree
1: Quizzes	15%	
2: Assignments	15%	
3: Report	10%	
4: Midterm Exam	10%	
5: Final Exam	50%	

(C) **Sentimental and Value Objectives**

1: The student learns the basics of calculus. **2: The student learns to apply mathematical concepts.** **3: The student learns the concepts of determinants and vectors.** **4: students acquire the skill of using mathematical relationships in other subjects**.

Methods of Teaching and Learning

1: Lectures. **2: Solving applied external exercises for each subject.** **3: Tutorial**

Methods of Evaluation

1: Quizzes	**15%**
2: Assignments	**15%**
3: Report	**10%**
4: Midterm Exam	**10%**
5: Final Exam	**50%1**

D) **General and Qualitative Skills (other skills related to the ability of employment and personal development)**

1: Solve problems related to calculus. **2: Make appropriate decisions to solve mathematical problems.**

11. **Course Structure**

Week	No of Hours	Required Learning Output	Title of Subject	Teaching Method	Evaluation
1	6	The student learns evaluate the determinants	Determinants	Lectures	Examinations and Assignments
2	6	The student learns the vectors an operations on them	Vectors	Lectures	Examinations and Assignments
3	6	The student learns properties of trigonometric functions	Trigonometric Functions	Lectures	Examinations and Assignments
4	6	The student learns to find the limits of functions	Limits of Functions	Lectures	Examinations and Assignments
5	6	The student learns rules of differentiation	Derivative of Algebraic and Trigonometric Functions	Lectures	Examinations and Assignments
6	6	The student learns properties of inverse trigonometric functions and rules of their derivatives	Inverse Trigonometric Functions, Exponential Functions, Logarithmic Functions and Their Derivatives	Lectures	Examinations and Assignments
7	6	The student learns the properties of hyperbolic and inverse hyperbolic functions and their derivatives	Hyperbolic and Inverse Hyperbolic Functions and Their Derivatives	Lectures	Examinations and Assignments
8	6	The student learns rules of integration	Indefinite and Definite Integrals	Lectures	Examinations and Assignments
9	6	The student learns the integral	Integration of Transcendental Functions	Lectures	Examinations and Assignments

		of transcendental functions			
10	**6**	**The student learns integral by parts and partial fractions**	**Integration by Parts and Partial Fractions**	**Lectures**	**Examinations and Assignments**
11	**6**	**The student learns the integral by trigonometric substitutions**	**Integration by Trigonometric Substitutions**	**Lectures**	**Examinations and Assignments**
12	**6**	**The student learns to find the area by using integral**	**Area under a Curve and Area Between Two Curves**	**Lectures**	**Examinations and Assignments**
13	**6**	**The student learns to find length of the curve and surface area by using integral**	**Length of a Curve and Surface Area**	**Lectures**	**Examinations and Assignments**
14	**6**	**The student learns to find the volume by using integral**	**Volumes**	**Lectures**	**Examinations and Assignments**
15	**6**	**The student learns numerical integration**	**Numerical Integrals**	**Lectures**	**Examinations and Assignments**

12.**Infrastructure**

a. Textbooks	**Calculus by Thomas**
b. References	**Advanced Engineering Mathematics**
c. Recommended books and periodicals (journals, reports, etc.)	
d. Electronic references, internet websites, etc	

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

Adding some subjects on limits, continuity, derivatives and integration.