Course Description

Course Description

This course description provides a brief summary of the most important characteristics of the course and the learning outcomes expected of the student to achieve, demonstrating whether he/she has made the most of the available learning opportunities. They must be match to the description of the programe.

1. Educational Institution	Shatt Al-Arab University
2. Scientific Department / Center	Computer Technology Engineering
3. Course name/code	Mathematics11/CET-1240
4. Programme(s) to which it contributes	First class of Telecommunications Networks Computer
5. Available forms of attendance	Lecture
6. Semester/Year	2024/2025

		Number of hours per week		
7. Number of study hours (total)	128 hours	theoretical	practical	Total
		2		8

8. Date of preparation of this description	29 – 7 - 2025

9. **Course Objectives:**

   1- Study the concepts of vectors and operations on vectors.
   2- Study the concepts of linear algebra.
   3- Study the types of matrices and operations on them.
   Solving linear equations using various methods.

10. Course Outcomes and Teaching Methods, Learning and Evaluation

.A1- Enabling the student to become familiar with mathematics in general.
A2- Properly and correctly perform the steps for solving mathematical problems.
A3- Providing the student with skills to deal with various mathematics disciplines.

B. Subject-specific skills

B1- Identify and solve a mathematical problem.

B2- Analyze and interpret results.

B3- Optimize the use of mathematical rules and laws.

Teaching and learning methods
- Lectures.
- Use of presentations.
- Assign students to prepare reports on course topics.
- Assign an assignment at the end of each lecture to assess the student's comprehension of the material**.**

Evaluation Methods

- Daily exams.

- Homework.

- Midterm and final exams for the course.

- Classroom interaction.

- Daily attendance.

C. Thinking Skills

C1- Focus: Engaging the student in solving mathematical problems.

C2- Responsiveness: Monitoring the student's engagement with the material being solved.

C3- Attention: Monitoring the student's interest and guiding them toward the right path to excellence.

Teaching and learning methods
- Lectures. - Use of presentations. - Assign students to prepare reports on course topics. - Assign an assignment at the end of each lecture to assess the student's comprehension of the material.
Evaluation Methods
- Daily exams. - Homework. - Midterm and final exams for the course. - Classroom interaction. - Daily attendance.
d. General and qualifying skills transferred (other skills related to employability and personal development). D1- Developing the student's ability to deal with modern mathematical methods. D2- Developing the student's ability to deal with mathematics on the internet. D3- Developing the student's ability to engage in dialogue and discussion.

11. Course Structure

Al , Week	Hours	Required Learning Outcomes	Name of the unit and/or subject	Method of education	Evaluation Method
1	2	Understanding the concept of vectors	Vectors	Theoretical presentation With the help of With Charts Illustrative + practical lectures	Attendance - Daily Exam Interaction in the Classroom
2	2	Operations on vectors (addition and subtraction of vectors)	Vectors	Theoretical presentation With the help of With Charts Illustrative + practical lectures	Attendance - Daily Exam Interaction in the Classroom
3	2	Scalar multiplication of vectors	Vectors	Theoretical presentation With the help of With Charts Illustrative + Panel Discussions	Attendance - Daily Exam Interaction in the Classroom
4	2	Cross product of vectors	Vectors	Theoretical presentation With the help of With Charts Illustrative + Panel Discussions	Attendance - Daily Exam Interaction in the Classroom
5	2		Midterm Exam	Theoretical presentation With the help of With Charts Illustrative + Panel Discussions	Attendance - Daily Exam Interaction in the Classroom

				Theoretical presentation With the help of With Charts Illustrative + Panel Discussions	Attendance - Daily Exam Interaction in the Classroom
6	2	Basic concepts of matrices	Matrices	Theoretical presentation With the help of With Charts Illustrative + Panel Discussions	Attendance - Daily Exam Interaction in the Classroom
7	2	Addition and subtraction of matrices	Matrices	Theoretical presentation With the help of With Charts Illustrative + Panel Discussions	Attendance - Daily Exam Interaction in the Classroom
8	2	Matrix multiplication	Matrices	Theoretical presentation With the help of With Charts Lectures + Panel Discussions	Attendance - Daily Exam Interaction in the Classroom
9	2	Finding the determinant of a matrix	Matrices	Theoretical presentation With the help of With Charts Illustrative + Panel Discussions	Attendance - Daily Exam Interaction in the Classroom
10	2	Linear equations	System of linear Equaitions	Theoretical presentation With the help of With Charts Illustrative	Attendance - Daily Exam Interaction in the Classroom
11	2	Solving linear equations by substitution	System of linear Equations	Theoretical presentation With the help of With Charts Illustrative	Attendance - Daily Exam Interaction in the Classroom

				Theoretical presentation With the help of With Charts Illustrative	Attendance - Daily Exam Interaction in the Classroom
12	2	Solving linear equations (solving systems of inverses	System of linear Equations	Theoretical presentation With the help of With Charts Illustrative	Attendance - Daily Exam Interaction in the Classroom
13	2	Solving linear equations by the Gauss method	System of linear Equations	Theoretical presentation With the help of With Charts Illustrative	Attendance - Daily Exam Interaction in the Classroom
14	2	Solving linear equations by Cramer's method	System of linear Equations	Theoretical presentation With the help of With Charts Illustrative	Attendance - Daily Exam Interaction in the Classroom
15	2	Solving linear equations (matrix equations)	System of linear Equations	Theoretical presentation With the help of With Charts Illustrative	Attendance - Daily Exam Interaction in the Classroom
16			Preparatory week before the final Exam		

12. Infrastructure	
1 Required textbook	DaivdC.Lay,Judi J.McDonald,Steven R.Lay,"Linear Algebra and Its Applications "Pearson Education, 6th edition (July 10th),ISBN-13:978-0136880929.
2 Key references (sources)	Gilbert Strang,"Linear Algebra and Its Application ",Cengage Learning 4th edition ,(January 1,2006),ISBN-13:978-0030105678.
a. Recommended books and references (scientific journals, reports,....)	
b. Electronic references, websites	https://www.udemy.com/course/linear-algebra-with -applications.

13-Course improvement Plan
١- Familiarity with all the latest developments in teaching and learning strategies. ٢- Increase the number of weekly course hours to 4 hours to accommodate the additional hours for classroom activities and completing as many exercises as possible.