Course Description Form

1. Course Name:
Linear Algebra II

2. Course Code:
Math 213

3. Semester / Year:
First/ Second

4. Description Preparation Date:
23/3/2024

5. Available Attendance Forms:
Presence of theories

6. Number of Credit Hours (Total) / Number of Units (Total)
4 hours per week (theory)/ 4 units

7. Course administrator's name (mention all, if more than one name)
Name: Dr.Zainab Riyadh Shaker Email: zaianb.riyadh22@nahrainuniv.edu.iq

8. Course Objectives

Course Objectives	1. Study of vector spaces and their solutions. 2. Solving linear systems by RREF and GJRR methods. 3. Inner product space and its applications. 4. Gram Schmidt method and their applications.

9. Teaching and Learning Strategies

Strategy	**A- Cognitive goals.** 1. Enable students to obtain knowledge and understanding of the basic principles of linear systems. 2. Enable students to obtain knowledge and understanding of the laws and properties of matrices. 3. Enable students to gain knowledge and understanding of how laws are linked 4. Enable students to obtain knowledge of methods for deriving basic equations of linear systems. 5. Enable students to identify the most important applications of linear algebra such as matrices and linear systems. **B. The skills goals special to the course.** 1. The student will be able to use matrices to solve linear systems. 2. Using mathematical methods to understand the behavior of linear systems. **Teaching and Learning Methods** 1. Giving theoretical lectures. 2. Giving descriptive homework. 3. Direct questions to students to test their understanding of the topic. 4. Assigning students homework. **Assessment methods** 1. Monthly and daily exams. 2. Programmed mid-term exams.

3. Homeworks.
4. direct oral questions.
C. Affective and value goals
1. Enabling students to solve problems related to matrices.
2. Enabling students to solve problems related to the derivations of laws and their equations
3. Enabling students to solve mathematical problems using the simplest means
D. General and rehabilitative transferred skills(other skills relevant to employability and personal development)
1. The ability to self-research to solve mathematical problems.
2. Recognize vector space and its benefits and use in mathematics.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	4		Real Vector Spaces		
2	4		Subspaces		
3	4		Span		
4	4		Linear Independence		
5	4		Basis and Dimension		
6	4		Homogeneous Systems		
7	4		Relationship between Nonhomogeneous Linear Systems and Homogeneous Systems		
8	4		Coordinates and Isomorphism's		
9	4		Isomorphism's		
10	4		Rank of a Matrix		
11	4		Inner Product Spaces		
12	4		Length and Direction in R^2 and R^3		
13	4		Gram-Schmidt Process		
14	4		Linear Transformations and Matrices		
15	4		Eigenvalues and Eigenvectors and Similarity		

11. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Introduction to Linear Algebra and Application by Bernard Kolman
Main references (sources)	Introduction to Linear Algebra by Franz hohn
Recommended books and references (scientific journals, reports…)	Any website that specializes in the study of linear algebra
Electronic References, Websites	