هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission

T-104
2022

Course Specification

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Course Title:	**Linear Algebra (2)**
Course Code:	**262Math-3**
Program:	**B.Sc. of Mathematics**
Department:	**Mathematics**
College:	**Art and Science**
Institution:	**Najran University**
Version:	1
Last Revision Date:	**07-05-2023**

Table of Contents:

A. General information about the course:

Course Identification					
1. Credit hours:	3				
2. Course type					
a.	University ☐	College ☐	Department☒	Track☐	Others☐
b.	Required ☒	Elective☐			
3. Level/year at which this course is offered:	4/2				
4. Course general Description Vectors (Vectors and their properties in two and three dimensions, Vector spaces, subsector spaces, Row Spaces and Column Spaces, Null matrix, Linear combinations, Linear independence of Vectors, Basis and dimension). Inner product space (Definition of inner product, Orthogonality, Standard basis). Linear transformations (common types of transformation, Kernel and Range of Linear Transformation, Matrix of A linear Transformation, Order of Matrix, Similarity of two Matrices, Eigenvalues and Eigenvectors for Matrix of linear Transformation, Transforming a matrix to diagonal matrix (symmetric matrix diagonalizable)					
5. Pre-requirements for this course (if any): **Linear Algebra (1) (261Math-3)**					
6. Co- requirements for this course (if any): **None**					
7. Course Main Objective(s) The main objective of this course, the student will be able to work with vectors in three and three dimensions, vector space, multiplication space, internal variables, as well as eigenvalues, eigenvectors, and diagonals of matrices.					

1. Teaching mode (**mark all that apply)**

No	Mode of Instruction	Contact Hours	Percentage
1.	Traditional classroom	3	100%
2.	E-learning		
3.	Hybrid • Traditional classroom • E-learning		
4.	Distance learning		

2. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	Lectures	45
2.	Laboratory/Studio	
3.	Field	
4.	Tutorial	
5.	Others (specify)	
	Total	45

B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
1.0	Knowledge and understanding Upon successful completion of this course students will be able to:			
1.1	Define the main concepts of the vector spaces and linear transformations	K1	• Lecture • Scientific discussions	• Quiz • Written Exam • Homework
2.0	Skills successful completion of this course students will be able to:			
2.1	Solve several problems related to the vector spaces.	S1	• Lecture • Scientific discussions	• Quiz • Written Exam • Homework
2.2	Prove some results related to the vector spaces and linear transformations			
2.3	Evaluate some problems of linear transformations.			
3.0	Values, autonomy, and responsibility Upon successful completion of this course students will be able to:			
3.1	Work as part of a team and independently.	V1	Homework	• Rubrics • Oral Test

C. Course Content

No	List of Topics	Contact Hours
1	Vector in two and three dimensions and their basic properties	6
2	Vector spaces and subspaces and their basic properties	8
3	Linear combinations and Linear independence of Vector	4
4	Basis and dimension of vector space	3
5	Inner product space	3
6	Orthogonality and standard basis	3
7	Linear transformations, Common types of transformation, Kernel and Range	6
8	Matrix of A linear Transformation, Order of Matrix, Similarity of two Matrices	6
9	Eigenvalues and Eigenvectors for Matrix of linear Transformation	3
10	Diagonalization	3
Total		45

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Midterm Exam 1	6-8	20
2.	Assignments & Quizzes	During classes	10
3.	Midterm Exam 2	13-15	20
4.	Final Exam	16-17	50

*Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.)

E. Learning Resources and Facilities

1. References and Learning Resources

Essential References	د. معروف سمحان- د. علي السحيباني و د. فوزي الذكير - الجبر الخطي وتطبيقاته - الطبعة الرابعة 2014
Supportive References	Nicholson, W. Keith Linear algebra with applications 7th Edition
Electronic Materials	
Other Learning Materials	

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	Classroom with suitable seat
Technology equipment (projector, smart board, software)	-Datashow -Smart Board -WiFi
Other equipment (depending on the nature of the specialty)	None

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Student	Student Questionnaire (Indirect)
Effectiveness of students assessment	Peer Reviewer	Rubrics (Indirect)
Quality of learning resources		
The extent to which CLOs have been achieved	Faculty	Direct

Assessor (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)

Assessment Methods (Direct, Indirect)

G. Specification Approval Data

COUNCIL /COMMITTEE	Council of Mathematics Department
REFERENCE NO.	14441017-0208-00014
DATE	17-10-1444H