



Course Specification

— (Postgraduate)

Course Title: Linear Algebra
Course Code: MATH631
Program: Master Program in Mathematics
Department: Mathematics
College: Science
Institution: University of Tabuk, KSA
Version: 2
Last Revision Date: 1/12/1442 H



Table of Contents

A. General information about the course:.....	3
1. Teaching mode(mark all that apply)	3
2. Contact Hours (based on the academic semester)	4
C. Course Content	5
D. Students Assessment Activities	6
E. Learning Resources and Facilities	6
1. References and Learning Resources	6
2. Required Facilities and equipment	6
F. Assessment of Course Quality.....	6
G. Specification Approval Data	7



A. General information about the course:

Course Identification	
1. Credit hours:	3 H
2. Course type	
a.	University <input type="checkbox"/> College <input type="checkbox"/> Department <input checked="" type="checkbox"/> Track <input type="checkbox"/> Others <input type="checkbox"/>
b.	Required <input type="checkbox"/> Elective <input checked="" type="checkbox"/>
3. Level/year at which this course is offered: Level-2 or higher	
4. Course general Description In this course, we will study some basic fundamentals of Linear Algebra. Some important properties, theorems, problems, and applications will also be discussed.	
5. Pre-requirements for this course (if any): None	
6. Co- requirements for this course (if any): None	
7. Course Main Objective(s)	
Main objectives are including the following:	
<ol style="list-style-type: none"> 1. Identify and recall the basic concepts of Linear Algebra to develop the interest of the concerned subject. 2. Describe the basic definitions and theorems on Vector spaces and linear Transformations and matrices. 3. Study matrices and their properties. 4. Discuss the concept of Inner product spaces and Orthogonality. 5. Introduce the concepts of Linear functional and the Dual space. 6. Explain the basic definitions and theorems on Symmetric bilinear forms and Quadratic forms 	

1. Teaching mode(mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1.	Traditional classroom	45	100 %
2.	E-learning		
3.	Hybrid <ul style="list-style-type: none"> ● Traditional classroom ● E-learning 		
4.	Distance learning		





2. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	Lectures	3 H /week
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 The students will be able to:			
1.1	Demonstrate advanced techniques, definitions and Physical problems by mathematical concepts .	K1	Lectures, Group works, Presentations, Classroom discussion, Seminar, Case study, problem solving session	Exams, Quizzes, Research projects, presentation, interactive discussion and participation, Survey
1.2	Describe the logical thinking and understanding the characteristics of problems in areas of mathematics	K2		
1.3	Enhance deep knowledge and their skills in research.	K3		
2.0	Skills The students will be able to:			
2.1	Analyze the characteristics and applications of linear algebra	S2	Lectures, Group works, Presentations, Classroom discussion, Seminar, Case study, problem solving sessions	Exams, Quizzes, Home works, Assignments, Research project, presentation, interactive discussion and participation, Surveys.
2.2	Solve the complicated problems clearly using advanced numerical methods .	S2		
2.3	Use creative thinking to the study a research work in this filed.	S3		
3.0	Values, autonomy, and responsibility The students will be able to:			



Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
3.1	Demonstrate and enhanced self-learning.	V2	Lectures, Group works, Presentations, Classroom discussion, Seminar, Case study, problem solving session	Research project, Home works, Assignments, presentation, interactive discussion and participation, Surveys.

C. Course Content

No	List of Topics	Contact Hours
1	Vector spaces	3
2	linear Transformations	3
3	Matrices	3
4	Diagonalization	3
5	Determinants	3
6	Inner product spaces, Orthogonality	3
7	Inner product spaces, Orthogonality	3
7	Mid-Exam #	--
8	Linear functionals	3
9	Linear functionals	3
10	The Dual space	3
11	The Dual space	3
12	Bilinear forms	3
13	Symmetric bilinear forms	3
14	Quadratic forms	3
15	Quadratic forms	3
16+17	Revision & Final Exam	
Total		45



D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Home works and Assignments	Weekly basis	20%
2.	Mid-term exam	7th week	25%
3.	Presentation and discussion	During the Semester	15%
4.	Final Exam	At End of Semester	40 %

*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	<ol style="list-style-type: none"> 1. S. Lipschutz, Linear Algebra, Schaum's Outline Series. McGraw-Hill (2009) 2. Michael E. Taylor, Linear Algebra, American Mathematical Society (2020)
Supportive References	I.N. Herstein, Abstract algebra, Prentice-Hall, upper saddle river, New Jersey 07458, USA (1996).
Electronic Materials	Saudi digital library
Other Learning Materials	N.A

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	Lecture Room with capacity of 30 students and equipped with White Board, Library
Technology equipment (projector, smart board, software)	Overhead projector and internet connection.
Other equipment (depending on the nature of the specialty)	None

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Students	Direct and Indirect
Effectiveness of students assessment	Teacher	Direct
Quality of learning resources	Students	Indirect
The extent to which CLOs have been achieved	Teacher, Quality Committee	Direct and Indirect
Other		





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

Assessment Methods(Direct, Indirect)

G. Specification Approval Data

Council / Committee	Approval by the Department Council
Reference No.	DEPARTMENT COUNCIL NO (26)
Date	11/9/1444 H

