



الجيد المظهر



## Course Specifications

<b>Course Title:</b>	Linear Algebra (1)
<b>Course Code:</b>	261Math-3
<b>Program:</b>	Mathematics
<b>Department:</b>	Mathematics
<b>College:</b>	Science and Arts
<b>Institution:</b>	Najran University



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### A. Course Identification

1. Credit hours:	3(3+0)
2. Course type	
a. University <input type="checkbox"/> College <input type="checkbox"/> Department <input checked="" type="checkbox"/> Others <input type="checkbox"/>	
b. Required <input checked="" type="checkbox"/> Elective <input type="checkbox"/>	
3. Level/year at which this course is offered:	Level 3/ Second year
4. Pre-requisites for this course (if any):	111-Math-3
5. Co-requisites for this course (if any):	None

### 6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	3	100 %
2	Blended		
3	E-learning		
4	Correspondence		
5	Other		

### 7. Actual Learning Hours (based on academic semester)

No	Activity	Learning Hours
<b>Contact Hours</b>		
1	Lecture	45
2	Laboratory/Studio	
3	Tutorial	
4	Others (Exams)	3
	<b>Total</b>	48
<b>Other Learning Hours*</b>		
1	Study	30
2	Assignments	10
3	Library	10
4	Projects/Research Essays/Theses	
5	Others(o.h)	15
	<b>Total</b>	113

\*The length of time that a learner takes to complete learning activities that lead to achievement of course learning outcomes, such as study time, homework assignments, projects, preparing presentations, library times





## B. Course Objectives and Learning Outcomes

### 1. Course Description

- Matrices algebra (Operations on Matrices, Some Types of matrices, Row reduction of matrices, Inverse of a matrix).
- Determinants (Determinant Calculator and their properties, Conjugate of Matrices, Finding the Inverse of a Matrix).
- System of linear equations and their solutions (Homogeneous and Nonhomogeneous Systems of Linear Equations, Representing Systems of Linear Equations using Matrices, Methods for Solving Systems of Linear Equations: Elimination method, Gauss-Jordan Method, By using Matrix inverse method, Reduction method, Cramer's Method)

### 2. Course Main Objectives

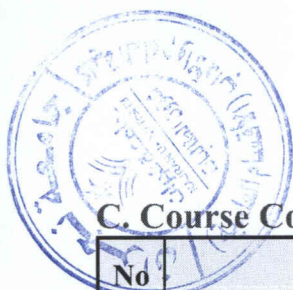
The main objectives of the course are to:

- Introduce basic concepts and skills in matrices algebra
- Present methods of solving systems of linear equations.

### 3. Course Learning Outcomes

CLOs		Aligned PLOs
1	<b>Knowledge:</b> Upon successful completion of this course students will be able to:	
1.1	Define Matrix and Matrix operations and state their basic properties	
1.2	Write the steps for finding the determinants, inverses and conjugate of matrices	
1.3	Recognize methods for solving systems of linear equations	
1.4	Identify systems of linear equations using matrices	
2	<b>Skills:</b> Upon successful completion of this course students will be able to:	
2.1	Calculate the determinants, invert and conjugate matrices	
2.2	Solve systems of linear equations	
2.3	Apply the row reduction algorithm to reduce a linear system to echelon form, or reduced echelon form.	
2...		
3	<b>Competence:</b>	
3.1	Develop the ability and confidence necessary to solve mathematical problems.	
3.2	Self-learning Project Interactive classes, teamwork, competitions	
3.3	carry out calculations orally and mentally	





### C. Course Content

No	List of Topics	Contact Hours
1	Matrices	
1.1	Operations and Types of matrices	
1.2	Row reduction of Matrices	
1.3	Inverse of a matrix by using Row reduction	
٢	Determinant	
2.1	Matrix determinant calculator	
2.2	and conjugate of matrices Properties of determinants	
2.3	Inverse of a matrix by using determinant	
3	Homogeneous and nonhomogeneous systems of linear equations	
3.1	Representing Systems of Linear Equations using Matrices	
3.2	Methods for solving systems of linear equations	
<b>Total</b>		

### D. Teaching and Assessment

#### 1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
<b>1.0</b>	<b>Knowledge</b>		
1.1	Define Matrix and Matrix operations and state their basic properties	Lecture	
1.2	Write the steps for finding the determinants, inverses and conjugate of matrices	Lecture	
1.3	Recognize methods for solving systems of linear equations		
1.4	Identify systems of linear equations using matrices		
<b>2.0</b>	<b>Skills</b>		
2.1	Calculate the determinants, invert and conjugate matrices		
2.2	Solve systems of linear equations		
...	Apply the row reduction algorithm to reduce a linear system to echelon form, or reduced echelon form.		
<b>3.0</b>	<b>Competence</b>		
3.1	Develop the ability and confidence necessary to solve mathematical problems.		
3.2	Self-learning Project Interactive classes teamwork, competitions		
3.3	carry out calculations orally and mentally		



## 2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	1 <sup>st</sup> midterm Exam	7 <sup>th</sup> week	20
2	2 <sup>nd</sup> midterm Exam	11 <sup>TH</sup> week	20
3	Assignments & Quizzes	During classes	10
4	Final Exam	At the end	50
5			
6			
7			
8			

\*Assessment task (i.e., written test, oral test, oral presentation, group project, essay, etc.)

## E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice :

- office hours weekly.
- Blackboard

## F. Learning Resources and Facilities

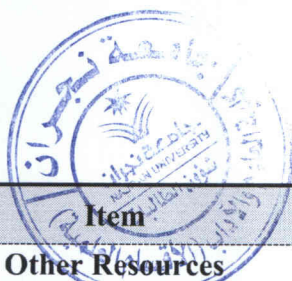
### 1. Learning Resources

Required Textbooks	
Essential References Materials	
Electronic Materials	
Other Learning Materials	

### 2. Facilities Required

Item	Resources
<b>Accommodation</b> (Classrooms, laboratories, demonstration rooms/labs, etc.)	
<b>Technology Resources</b> (AV, data show, Smart Board, software, etc.)	





Item	Resources
<b>Other Resources</b> (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	

### G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods

**Evaluation areas** (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)

**Evaluators** (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify))

**Assessment Methods** (Direct, Indirect)

### H. Specification Approval Data

Council / Committee	
Reference No.	
Date	