



**Department of Physics**

**College of Education**

**Salahaddin University**

**Subject: Linear Algebra**

**Course Book – second year**

**First semester**

**Lecturer's name: Bushra Najmaddin Abdul-Gaphur**

**Scientific title: Assistant Lecturer**

**Academic Year: 2024-2025**

### **Course Book**

<b>1. Course name</b>	<b>Linear Algebra</b>
<b>2. Lecturer in charge</b>	<b>Bushra N. Abdul-Ghafur</b>
<b>3. Department/ College</b>	<b>Mathematics\ Education College</b>
<b>4. Contact</b>	<b>E-mail:bushra.abdulgaphur@su.edu.krd</b>

	<b>Tel: 07504973726</b>
<b>5. Time (in hours) per week</b>	Theory: 6
<b>6. Office hours</b>	Group A: Tuesday: 8:30-10:30 Wednesday: 12:30-1:30 Group B: Tuesday: 12:30-1:30 Wednesday: 8:30-10:30
<b>7. Course code</b>	
<b>8. Teacher's academic profile</b>	I was born in Erbil-Kurdistan. I have got the B.Sc. degree in Mathematics from Salahaddin University-Erbil in 2004, the MSc. degree in Algebra from Salahaddin University-Erbil in 2011, and now I am a student of Ph.D.
<b>9. Keywords</b>	Vector analysis, Matrices and determinants.
<b>10. Course overview:</b>	
<p><b>Linear Algebra</b> is a branch of mathematics that have many applications in Physics such as: Fluid flow, electrical Physics, Mechanics,...etc.</p> <p>In this course, we give the definition of vectors and matrices with some of their properties.</p>	
<b>11. Course objective:</b>	
<p>The objective of this course is to introduce the matrices and vectors. The first objective of this course is to develop those parts of the theory that are prominent in applications of the subject.</p>	
<b>12. Student's obligation</b>	
<p>1- Attendance.                  2- Quiz.                  3- There examinations will be given, each 40%.                  4- Final exam 60%.</p>	
<b>13. Forms of teaching</b>	
The kind of teaching method includes explaining the subject and the	

discussion with students.

**14. Assessment scheme**

- 1- 5% from quiz after each section.
- 2- 5% from Home work after each section.
- 3- 5% from example classes.
- 4- 25% from midterm test.
- 5- 60% from final Examination.

**15. Student learning outcome:** The student will be familiar with main topics in Physics such as: Vectors in three dimension and matrices with real number entries.

**16. Course Reading List and References:**

- 1. Linear Algebra by Serge Lang
- 2. An Introduction to Linear Algebra by V. Krishnamurthy.
- 3. Elementary Linear Algebra by Bernard Kolman.

**17. The Topics:**

**Lecturer's name**

**Course Program**

- Week-1: Matrices
- Week2: Types of matrices
- Week3-4: The determinant of matrices
- Week5: Cofactor and minor of matrices
- Week6: Matrix inversion
- Week7: System of linear equations
- Week8-9: Solving linear equations.
- Week10-11: Vectors, Length of Vectors, Direction of Vectors.

Assistant Lecturer  
 Busha N. Abdul-Gaphur  
 G(A)- (3 hrs)  
 G(B)- (3 hrs)  
 (6 hrs)

<p>Week12: Operations on Vectors, dot product, Properties on dot product.</p> <p>Week13: Cross product of two vectors, Properties on cross product.</p>	
<p><b>18. Practical Topics</b></p> <p>In this section The lecturer shall write titles of all practical topics he/she is going to give during the term. This also includes a brief description of the objectives of each topic, date and time of the lecture</p> <p><b>19. Examinations:</b></p> <p>1. Compositional: In this type of exam the questions usually starts with Explain how, What are the reasons for...?, Why...?, How....? With their typical answers Examples should be provided</p> <p>2. True or false type of exams:</p> <p>In this type of exam a short sentence about a specific subject will be provided, and then students will comment on the trueness or falseness of this particular sentence. Examples should be provided</p> <p>3. Multiple choices: In this type of exam there will be a number of phrases next or below a statement, students will match the correct phrase. Examples should be provided.</p>	
<p><b>20. Extra notes:</b></p> <p>Here the lecturer shall write any note or comment that is not covered in this template and he/she wishes to enrich the course book with his/her valuable remarks.</p>	
<p><b>21. Peer review</b></p> <p>This course book has to be reviewed and signed by a peer. The peer approves the contents of your course book by writing few sentences in this section. <i>(A peer is person who has enough knowledge about the subject you are teaching, he/she has to be a professor, assistant professor, a lecturer or an expert in the field of your subject).</i></p>	<p>پیداچونہوہی ھاوہل</p>

ئەم كۆرسىبووكە دەبىت لەلايەن ھاوملىكى ئەكادىمىيەو سەير بىكرىت و ناوهرۆكى بابەتكەنى كۆرسەكە پەسەند بىكات و جەند ووشەيەك بنووسىت لەسەر شىاوى ناوهرۆكى كۆرسەكە و واژووى لەسەر بىكات.  
ھاومل ئەو كەسەيە كە زانىارى ھەبىت لەسەر كۆرسەكە و دەبىت پلەى زانستى لە مامۇستا كەمتر نەبىت.