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**Department of Physics**

**College of Education**

**Salahaddin University**

**Subject: Linear Algebra**

**Course Book – second year**

**First semester**

**Lecturer's name : Dr. Fryad Hisein Abdulqadr-Ph.D**

**Scientific title: Assistant professor**

**Academic Year: 2023-2024**

**Course Book**

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| **1. Course name** | **Linear Algebra** | | |
| **2. Lecturer in charge** | Dr. Fryad H. Abdulqadr | | |
| **3. Department/ College** | Mathematics\ Education College | | |
| **4. Contact** | E-mail: fryad.abdulqadr@su.edu.krd | | |
| **5. Time (in hours) per week** | Theory: 6 | | |
| **6. Office hours** | Group A:  Tuesday:9:30-11:30  Wednesday: 8:30-9:30  Group B:  Tuesday:8:30-10:30  Wednesday: 8:30-9:30 | | |
| **7. Course code** |  | | |
| **8. Teacher's academic profile** | I was born in Erbil-Kurdistan. I have got the B.Sc. degree in Mathematics from Salahaddin University-Erbil in 1997, the MSc. degree in Complex Analysis from Salahaddin University-Erbil in 2002, and the Ph.D. degree in algebra and Graph Theory from the Mosul University in 2015. My doctoral research concerned with Zero divisor graph of commutative rings. Now, I am a lecturer in Mathematics department and I teach complex analysis and its applications. | | |
| **9. Keywords** | Vector analysis, Matrices and determinants. | | |
| **10. Course overview:**  **Linear Algebra** is a branch of mathematics that have many applications in Physics such as: Fluid flow, electrical Physics, Mechanics,…etc.  In this course, we give the definition of vectors and matrices with some of their properties. | | | |
| 11. Course objective:  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. | | | |
| **12. Student's obligation**  The student are obliged to attend to the class room. Student also enforced to make examination and discussion in the classroom. | | | |
| **13. Forms of teaching**  The kind of teaching method includes explaining the subject and the discussion with students. | | | |
| **14. Assessment scheme**   1. There examinations will be given, each 30% 2. Daily activities (Home work, and Quiz) 10% 3. Final exam 60%‌ | | | |
| **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**  Week1-2: Vectors  Week3: Dot product and cross product of two vectors.  Week4: Area and volume  Week5: Equation of lines and planes  Week6-7: Matrices  Week8: Types of matrices  Week9-10: The determinant of matrices  Week11: Matrix inversion  Week12: Cofactor and minor of matrices  Week13: System of linear equations  Week14: Solving linear equations. | | Assistant Profesor Dr. Fryad H. Abdulqadr  (6 hrs) | |
| **18. Practical Topics**  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  **19. Examinations:**  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  2. True or false type of exams:  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  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. | | |  |
| **20. Extra notes:**  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. | | | |
| **21. Peer review پێداچوونه‌وه‌ی هاوه‌ڵ**  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.  *(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).*  ئه‌م کۆرسبووکه‌ ده‌بێت له‌لایه‌ن هاوه‌ڵێکی ئه‌کادیمیه‌وه‌ سه‌یر بکرێت و ناوه‌ڕۆکی بابه‌ته‌کانی کۆرسه‌که‌ په‌سه‌ند بکات و جه‌ند ووشه‌یه‌ک بنووسێت له‌سه‌ر شیاوی ناوه‌ڕۆکی کۆرسه‌که و واژووی له‌سه‌ر بکات.  هاوه‌ڵ ئه‌و که‌سه‌یه‌ که‌ زانیاری هه‌بێت له‌سه‌ر کۆرسه‌که‌ و ده‌بیت پله‌ی زانستی له‌ مامۆستا که‌متر نه‌بێت.‌‌ | | | |