# LINEAR ALGEBRA APPLICATIONS

| 1 | Course Title: | LINEAR ALGEBRA APPLICATIONS |
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| 2 | Course Code: | İMÖ0015 |
| 3 | Type of Course: | Optional |
| 4 | Level of Course: | First Cycle |
| 5 | Year of Study: | 2 |
| 6 | Semester: | 3 |
| 7 | ECTS Credits Allocated: | 4.00 |
| 8 | Theoretical (hour/week): | 2.00 |
| 9 | Practice (hour/week): | 0.00 |
| 10 | Laboratory (hour/week): | 0 |
| 11 | Prerequisites: | |
| 12 | Language: | Turkish |
| 13 | Mode of Delivery: | Face to face |
| 14 | Course Coordinator: | Prof. Dr. RIDVAN EZENTAŞ |
| 15 | Course Lecturers: | |
| 16 | Contact information of the Course Coordinator: | rezentas@uludag.edu.tr<br>0224 2942287<br>Uludağ Üniversitesi Eğitim Fakültesi, E Blok, Matematik ve Fen Bilimleri Bölümü, Matematik Eğitimi ABD. |
| 17 | Website: | |
| 18 | Objective of the Course: | Students improve the ability of abstract thinking, the concepts of matrices and determinants intensified vector space, to create the basis for algebra classes. |
| 19 | Contribution of the Course to Professional Development: | Creates and develops the knowledge base of the prospective teacher. Comprehends the concepts related to the field and the relations between concepts based on the competencies gained in secondary education. Have defines and analyzes problems related to his field, and develops solutions based on evidence and research. |
| 20 | Learning Outcomes: | |
| | | 1 | Gains the skill abstract thinking. |
| | | 2 | Solves systems of linear equations using matrices and determinants. |
| | | 3 | Consolidates the concept of vector space with the matrix and determinant. |
| | | 4 | Understand the structure of vector space and subspace. |
| | | 5 | Vectors in a vector space understands the concepts of linear dependence and linear independence. |
| | | 6 | Understands the concept of a vector space basis and dimension. |
| | | 7 | Establishes the relationship between the dimension of the row space.and a rank of matrix |
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| 21 | Course Content: | |

## Course Content:

| Week | Theoretical | Practice |
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| 1 | Introducing the course, Matrix theory | |
| 2 | Matrix operations, primitive row and column operations | |
| 3 | Rank of a Matrix, Inverse of a square matrix | |
| 4 | Determinants | |
| 5 | Determinants | |
| 6 | Systems of linear equations | |
| 7 | Systems of linear equations | |
| 8 | General Repetition and Midterm Exam | |
| 9 | Vector spaces, subspaces | |
| 10 | Subspace of a cluster stretch | |
| 11 | Linear dependence and linear independence | |
| 12 | A vector space and dimension of base | |
| 13 | Spaces of a matrix of rows and columns | |
| 14 | General Repetition | |
| | | |
| 22 | Textbooks, References and/or Other Materials: | Editör: Orhan ÖZER (1998), Matematik Öğretmenliği Lineer Cebir, Anadolu Üniversitesi Açık Öğretim Fakültesi Yayınları No:589.<br>H.Hilmi Hacısalihoğlu (2000) Lineer Cebir I, , Hacısalihoğlu Yayıncılık,<br>Bernard Kolman;(2004)  Elementary Linear Algebra; Fifth Edition, |

| Activites | Number | Duration (hour) | Total Work Load (hour) |
|---|---|---|---|
| Theoretical / Midterm Exam | 1 | 40 / 2.00 | 28.00 |
| Practicals/Labs | 0 | 0.00 | 0.00 |
| Home work project / Self study and preperation | 0 | 0.00 / 9.00 | 90.00 |
| Homeworks | 0 | 0.00 | 0.00 |
| Projects / Total | 2 | 100.00 | 0.00 |
| Field Studies | 0 | 0.00 | 0.00 |
| Success Grade / Midterm exams | 1 | 1.00 | 1.00 |
| Others | 0 | 0.00 | 0.00 |
| Final Exams / Total | 100.00 | 1.00 | 1.00 |
| Total Work Load | | | 120.00 |
| Course / Total work load/ 30 hr | 3E are used in the teaching of the course. Midterm and final exams are taken into consideration in the | | 4.00 |
| ECTS Credit of the Course | | | 4.00 |

| 24 | ECTS / WORK LOAD TABLE |
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| 25 | CONTRIBUTION OF LEARNING OUTCOMES TO PROGRAMME QUALIFICATIONS | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PQ1 | PQ2 | PQ3 | PQ4 | PQ5 | PQ6 | PQ7 | PQ8 | PQ9 | PQ10 | PQ11 | PQ12 | PQ13 | PQ14 | PQ15 | PQ16 |
| **ÖK1** | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **ÖK2** | 4 | 4 | 4 | 4 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **ÖK3** | 4 | 3 | 3 | 3 | 3 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **ÖK4** | 4 | 3 | 3 | 3 | 3 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

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| **ÖK5** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **ÖK6** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **ÖK7** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

**LO: Learning Objectives    PQ: Program Qualifications**

| **Contribution Level:** | 1 very low | 2 low | 3 Medium | 4 High | 5 Very High |
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