# LINEEAR ALGEBRA II

| 1 | Course Title: | LINEEAR ALGEBRA II |
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| 2 | Course Code: | MAT0504 |
| 3 | Type of Course: | Optional |
| 4 | Level of Course: | First Cycle |
| 5 | Year of Study: | 2 |
| 6 | Semester: | 4 |
| 7 | ECTS Credits Allocated: | 4.00 |
| 8 | Theoretical (hour/week): | 3.00 |
| 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. Atilla AKPINAR |
| 15 | Course Lecturers: | Prof.Dr. Basri ÇELİK-<br>Prof.Dr. Esen İYİGÜN |
| 16 | Contact information of the Course Coordinator: | E-posta: aakpinar@uludag.edu.tr<br>Telefon: +90 224 2941774<br>Adres: Bursa Uludağ Üniversitesi Fen-Edebiyat Fakültesi Matematik Bölümü 16059 Görükle-Bursa-TÜRKİYE |
| 17 | Website: | |
| 18 | Objective of the Course: | The objective of this course, by constructing the relation between linear mappings and matrices, is to understand the finding the echelon form of a matrix and the inverse (if exists) of a matrix, the rank of a matrix and also solving to linear equation systems with several methods. |
| 19 | Contribution of the Course to Professional Development: | is to gain knowledge of basic linear algebra to students, to improve the ability of finding solution to problems and analytical thinking. |
| 20 | Learning Outcomes: | |

| | 1 | constructs to matrix of the linear transformation |
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| | 2 | uses elementary row operations, elementary matrices and matrix algebra to solve systems of equations |
| | 3 | understands determinants and their properties |
| | 4 | develops your ability to solve problems involving linear equations, matrices, determinants and vectors |
| | 5 | learns how to find/calculate the determinant, inverse, transpose of matrices |
| | 6 | understands matrix notation and the different matrix forms |
| | 7 | demonstrates proficiency in correct formulation and solving linear problems in terms of systems of linear equations in matrix notation |
| | 8 | writes solutions to problems involving linear algebra in a clear, mathematically-correct, and grammatically-correct fashion |

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| 21 | Course Content: | |
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**Course Content:**

| Week | Theoretical | Practice |
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| 1 | Matrix corresponding to linear transformation, rank of a linear transformation | |
| 2 | Change of basis and properties of matrix | |
| 3 | Elementary operations, echolon form and reduced echolon form | |
| 4 | Elementary operations of vectors and matrices | |
| 5 | Linear equation systems, definition and examples, solution method by Gauss method | |
| 6 | Solution of Linear equation systems by Gauss-Jordan method and LU partition | |
| 7 | Permutations, odd-even permutations, the group of permutations | |

| Activites | Number | Duration (hour) | Total Work Load (hour) |
| --- | --- | --- | --- |
| Theoretical | 14 | 3.00 | 42.00 |
| Practicals/Labs | 0 | 0.00 | 0.00 |
| Self study and preperation | 14 | 2.00 | 28.00 |
| Homeworks | 0 | 0.00 | 0.00 |
| Projects | 0 | 0.00 | 0.00 |
| Field Studies | 0 | 0.00 | 0.00 |
| Midterm exams | 1 | 25.00 | 25.00 |
| Others | 0 | 0.00 | 0.00 |
| Final Exams | 1 | 25.00 | 25.00 |
| Total Work Load | | | 120.00 |
| Total work load/ 30 hr | | | 4.00 |
| ECTS Credit of the Course | | | 4.00 |

| 22 | Textbooks, References and/or Other Materials: | 1) Lineer Cebir, H.Hilmi Hacısalihoğlu, Ankara, 1985 <br> 2) Uygulamalı Lineer Cebir, B.Kol-D.R.Hill (tercüme), Ankara, 2002 <br> 3) Linear Algebra, Serge Lang, Newyork, 1972 <br> 4) Elemantary Linear Algebra, Hartfiel.Hobbs, 1987, PWS Publisher |
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| 23 | Assesment | |
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| TERM LEARNING ACTIVITIES | NUMBER | WEIGHT |
| --- | --- | --- |
| Midterm Exam | 1 | 40.00 |
| Quiz | 0 | 0.00 |
| Home work-project | 0 | 0.00 |
| Final Exam | 1 | 60.00 |

| Total | | 2 | 100.00 |
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| Contribution of Term (Year) Learning Activities to Success Grade | | 40.00 | |
| Contribution of Final Exam to Success Grade | | 60.00 | |
| Total | | 100.00 | |
| Measurement and Evaluation Techniques Used in the Course | | The system of relative evaluation is applied. | |

| 24 | ECTS / WORK LOAD TABLE |
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| 25 | CONTRIBUTION OF LEARNING OUTCOMES TO PROGRAMME QUALIFICATIONS |
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| | PQ1 | PQ2 | PQ3 | PQ4 | PQ5 | PQ6 | PQ7 | PQ8 | PQ9 | PQ10 | PQ11 | PQ12 | PQ13 | PQ14 | PQ15 | PQ16 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ÖK1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| ÖK2 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| ÖK3 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| ÖK4 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| ÖK5 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| ÖK6 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| ÖK7 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| ÖK8 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| LO: Learning Objectives    PQ: Program Qualifications |
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| Contribution Level: | 1 very low | 2 low | 3 Medium | 4 High | 5 Very High |
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