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| Course Details |
| Code | **Academic Year** | **Semester** |
| BE013 | 2021-2022 |  |
| Title | **T** | **A** | **L** | **ECTS** |
| Linear Algebra | 3 | 1 | 0 | 10 |
|  |
| Language | English |
| Level | **Master** |  | **Doctorate** | **X** |
| Department / Program | PhD in Business and Economics |
| Forms of Teaching and Learning |  |
| Course Type | **Compulsory** |  | **Elective** | **X** |
| Objectives | In this course, it is aimed to give detailed theoretical information about linear algebra topics and to examine examples related to their application areas. |
| Content | Vectors, matrices, concept of determinant, systems of linear equations, inner product spaces, linear transformations, eigenvalues and eigenvectors, numerical methods |
| Prerequisites |  |
| Coordinator |  |
| Lecturer(s) |  |
| Assistant(s) |  |
| Work Placement |  |
| Recommended or Required Reading |
| Books / Lecture Notes | Larson, R., Falvo, D. C., Elementary Linear Algebra Sixth Edition, Houghton Mifflin Harcourt Publishing Company, 2009Anton, H. Lineare Algebra: Einführung, Grundlagen, Übungen,, Spektrum, 1998. |
| Other Sources |  |
| Additional Course Material |
| Documents |  |
| Assignments |  |
| Exams |  |
| Course Composition |
| Social Sciences |  | 40% |
| Educational Sciences |  | % |
| Natural Sciences |  | % |
| Health Sciences |  | % |
| Expert Knowledge |  | 60% |
| Assessment |
| Activity | **Count** | **Percentage (%)** |
| Midterm Exam | 1 | 40% |
| Quiz |  | % |
| Assignments |  | % |
| Attendance |  | % |
| Recitations |  | % |
| Projects |  | % |
| Final Exam | 1 | 60% |
| Total | **100** |
| ECTS Points and Work Load |
| Activity | **Count** | **Duration** | **Work Load (Hours)** |
| Lectures | 14 | 3 | 42 |
| Self-Study | 14 | 4 | 56 |
| Assignments |  |  |  |
| Presentation / Seminar Preparation | 2 | 30 | 60 |
| Midterm Exam | 1 | 44 | 44 |
| Recitations | 14 | 1 | 14 |
| Laboratory |  |  |  |
| Projects |  |  |  |
| Final Exam | 1 | 64 | 64 |
| Total Work Load | **280** |
| ECTS Points (Total Work Load / 28)  | **10** |
| Course Learning Outcomes |
| 1 | Students have theoretical information on linear algebra topics. |
| 2 | Students can make applications related to these topics. |
| Weekly Content |
| 1 | Vectors and vector spaces |
| 2 | Subspaces, basis, dimension, coordinates and change of basis |
| 3 | Matrices and operations with matrices |
| 4 | The concept of determinant and properties of the determinant |
| 5 | Solution of linear equation systems |
| 6 | Solution of linear equation systems |
| 7 | Inner product spaces |
| 8 | Inner product spaces |
| 9 | Midterm exam |
| 10 | Linear transformations |
| 11 | Linear transformations |
| 12 | Eigenvalues and eigenvectors |
| 13 | Eigenvalues and eigenvectors |
| 14 | Eigenvalues and eigenvectors |
| 15 | Numerical methods |
| Contribution of Learning Outcomes to Program Objectives (1-5) |
| CLO | **P1** | **P2** | **P3** |
| 1 | 5 | 5 | 5 |
| 2 | 5 | 5 | 5 |
| Contribution Level | 1: Low 2: Low-intermediate 3: Intermediate 4: High 5: Very High |
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