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| **TITLE OF THE COURSE: Linear Algebra** |
| **GRADUATE: Bachelor’s Degree in Mechanical Engineering (221)** | **COURSE: 2024-2025** | **QUARTER: First** |

***29 sessions (15 in a master group, 14 in a small group) in 14 weeks.***

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| **WEEKLY PLANNING OF THE COURSE** |
| **WEEK** | **SESSION** | **DESCRIPTION** | **GROUP** |  |  | **STUDENT'S WEEKLY WORK** |
| BIG | SMALL | DESCRIPTION | CLASSROOM HOURS | WORKING HOURS(Max. 7h. week) |
| 1 | 1 | Presentation0. Complex Numbers | X |  |  |  |  | 1,66 | 777 |
| 2 | Selected exercises |  | X |  |  |  | 1,66 |
| 2 | 3 | 1. Complex Numbers
2. Systems of linear equations
 | X |  |  |  |  | 1,66 |
| 4 | Selected exercises |  | X |  |  |  | 1,66 |
| 3 | 5 | 1. Systems of linear equations | X |  |  |  |  | 1,66 |
| 6 | Selected exercises |  | X |  |  |  | 1,66 |
| 4 | 7 | 1. Systems of linear equations2.1 Matrix operations | X |  |  |  |  | 1,66 | 7 |
| 8 | Selected exercises |  | X |  |  |  | 1,66 |
| 5 | 9 | * 1. The inverse of a matrix
	2. Block matrices
 | X |  |  |  |  | 1,66 | 7 |
| 10 | Selected exercises |  | X |  |  |  | 1,66 |

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| 6 | 11 | 2.4 Determinants | X |  |  |  |  | 1,66 | 7 |
| 12 | Selected exercises**Control of themes 0, 1 and 2** |  | X |  |  |  | 1,66 |  |
| 7 | 13 | * 1. Vector spaces and subspaces
	2. Null space and column space of a matrix
 | X |  |  |  |  | 1,66 |  |
| 14 | Selected exercises | X |  |  |  |  | 1,66 | 7 |
| 8 | 15 | 3.3 Linearly independent sets and bases3.4 Coordinate Systems and Dimension of a Vector Space |  | X |  |  |  | 1,66 |
| 16 | Selected exercises | X |  |  |  |  | 1,66 | 7 |
| 9 | 17 | 3.5 Linear transformations |  | X |  |  |  | 1,66 |
| 18 | Selected exercises | X |  |  |  |  | 1,66 | 7 |
| 10 | 19 | * 1. Eigenvectors and eigenvalues

4.2 The characteristic equation |  | X |  |  |  | 1,66 |
| 20 | * 1. Selected exercises
 | X |  |  |  |  | 1,66 | 7 |
| 11 | 21 | 4.3 Diagonalisation5.1 Scalar product, norm and orthogonality |  | X |  |  |  | 1,66 |
| 22 | Selected exercises | X |  |  |  |  | 1,66 | 7 |
| 12 | 23 | * 1. Orthogonal sets

5.5 Orthogonal projection |  | X |  |  |  | 1,66 |
| 24 | **Control of themes 2 and 3**Selected exercises | X |  |  |  |  | 1,66 | 7 |
| 13 | 25 | * 1. The Gram-Schmidt process

5.5 Least squares problems |  | X |  |  |  | 1,66 |
| 26 | Selected exercises | X |  |  |  |  | 1,66 | 7 |
| 14 | 27 | 6. Diagonalisation of symmetric matrices |  | X |  |  |  | 1,66 |
| 28 | Selected exercises | X |  |  |  |  | 1,66 | 7 |
|  | 29 | Selected exercises |  | X |  |  |  | 1,66 |  |
| **Subtotal 1** | **46,66** | **98** |
|  | **Total 1** *(Face-to-face and student work hours between weeks 1-14)* | **144,66** |

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| 15-17 |  | Extra sessions, tutorials, etc.  |  |  |  |  |  | 3,33 | 6 |
|  |  | Final exam |  |  |  |  |  |  |  |

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| **Subtotal 2** | **3,33** | 12 |
| **Total 2** *(Face-to-face and student work hours between weeks 15-18)* |  |

**TOTAL** *(Total 1 + Total 2)*

**160**