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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 | Presentation  0. Complex Numbers | X |  |  |  |  | 1,66 | 7  7  7 |
| 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 equations  2.1 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 bases  3.4 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 Diagonalisation  5.1 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**