Schedule for Linear Algebra (2015)
BSc in Robotics, 1st Semester. Aalborg University

We will go through the following material from [SIF] L.E. Spence, A.J. Insel, S.H. Friedberg, "Elementary Linear Algebra: A Matrix Approach, 2nd Edition, Pearson, Prentice Hall, 2008.

1.session, 8th September Introduction to vectors and matrices: 1.1, 6.1 p. 361-366, on pp. 364 - 365 only the theorems. (Book 3/newest book: 7.1. p. 425-430, on pp. 428 - 429 only the theorems.) 1.2 till p.19

2.session, 11th September Matrixvectorproduct systems of linear equations: 1.2 from p. 19, 1.3

3.session, 15th September Gauss-elimination. Span. 1.4 og 1.6

4.session, 29th September Linear independence 1.7

5.session, 6th October Miniproject 1.(Solve systems of linear equations using MatLab)

6.session, 9th October Linear transformations and matrices.. 2.7. 2.8 til s. 185 mid. (In general about functions (Injective, surjective bijective), Appendix B)

7.session, 16th October Matrix multiplication, composition of linear transformations. 2.1 og 2.8 p.185 mid, till 187

8.session, 20rd October Invertible matrices and invertible linear transformations. 2.3, 2.4 og 2.8 p.187-188

9.session, 23rd October Determinants. 3.1 og 3.2 till p. 217 l.9.

10.session, 27th October Miniproject 2 (0-1 matrices, Kirchoff's law)

11.session, 30th October Subspaces, basis for subspaces. 4.1 og 4.2 till p.245, mid.

12.session, 10th November Dimension, Rank and nullity. the remaining part of 4.2, 4.3

13.session, 13th November Coordinate systems. 4.4

14.session, 17th November Linear transformations and coordinate systems. 4.5

15.session, 20th November Eigenvectors and og eigenvalues. 5.1 og 5.2 till p. 307

16.session, 24th November Diagonalization. 5.3

17.session, 27th November Miniproject 3 (Systems of differential equations, 5.5)

18.session, 1st December Orthogonality, Gram Schmidt, QR-faktorisation. 6.2 (Book 3/newest book: 7.2)

19.session, 4th December Orthogonal projection. 6.3. (Book 3/newest book: 7.3)

20.session, 8th December Orthogonal matrices Orthogonal transformations in the plane. 6.5 til s. 419. (Book 3/newest book: 7.5 til p. 483)

21.session, 11th December Miniproject 4 (Method of least squares, 6.4 (Book 3/newest book: 7.4)

22.session, 15th December Rigid motion. 6.5: p.419-421 (Book 3/newest book: 7.5: p.483-485)