1. Vector space, span, linear depedency, basis, dimension, subspace
2. Linear mapping, matrix representation, Nullspace, Image
3. Rank theorem
4. symmetric matrices, Linear system, LU factorization
5. Inner product, Cauchy-Schwarz, orthonormal basis, projection
6. Orthogonal matrix, Gram Schmidt, orthogonal subspaces, orthogonal projection
7. Eigenvalues, spectral theorem, SVD
8. Spectral norm, inequalities with spectral norm, condition number
9. PCA, problem on graphs
10. Optim