# Tentative Course Schedule

Updated: January 14, 2024.

| Meeting | Day | Topic | Reference | Assignment |
|---|---|---|---|---|
| 1 | 15/1 | Vector spaces: definition and examples | §1B | |
| 2 | 18/1 | Subspaces, sums and direct sums | §1C | |
| 3 | 18/1 | Span, independence, bases | §2A, §2B | |
| 4 | 22/1 | Bases and dimension | §2B, §2C | **Homework 1** |
| 5 | 25/1 | Linear maps, null spaces and range | §3A, §3B | |
| 6 | 25/1 | Matrices and invertibility | §3C, §3D | |
| 7 | 29/1 | Products and Quotients | §3E | **Homework 2** |
| 8 | 1/2 | Duality | §3F | |
| 9 | 1/2 | Duality | §3F | |
| 10 | 5/2 | Digression: Polynomials | §4 | |
| 11 | 8/2 | Invariant subspaces | §5A | **Homework 3** |
| 12 | 8/2 | The Minimal Polynomial | §5B | |
| 13 | 19/2 | Upper-Triangular Matrices | §5C | **Homework 4** |
| 14 | 22/2 | Diagonalizable Operators | §5D | |
| 15 | 22/2 | Commuting Operators | §5E | |
| 16 | 26/2 | Inner Products and Norms, Orthonormal Bases | §6A §6B | **Homework 5** |
| 17 | 29/2 | Orthogonal Complements, Minimization | §6C | |
| 18 | 29/2 | Pseudoinverses | §6C | |
| – | 7/3 (?) | **Midterm 1** | | |
| 19 | 11/3 | Self-Adjoint and Normal Operators | §7A | **Homework 6** |
| 20 | 14/3 | Spectral Theorem | §7B | |
| 21 | 14/3 | Positive Operators | §7C | |
| 22 | 18/3 | Isometries, Unitary Operators and Matrix Factorizations | §7D | **Homework 7** |
| 23 | 21/3 | Singular Value Decomposition | §7E | |
| 24 | 21/3 | Consequences of Singular Value | §7F | |
| 25 | 25/3 | Generalized Eigenvectors and Nilpotent Operators | §8A | **Homework 8** |
| 26 | 28/3 | Generalized Eigenspace Decomposition | §8B | |
| 27 | 28/3 | Jordan Form | §8C | |
| 28 | 8/4 | Trace | §8D | **Homework 9** |
| 29 & 30 | 11/4 | **Midterm 2** | | |
| 31 | 15/4 | Bilinear and Quadratic Forms | §9A | **Homework 10** |
| 32 | 18/4 | Tensor Products | §9D | |
| 33 | 18/4 | Tensor Products | §9D | |
| 34 | 22/4 | Alternating Multilinear Forms | §9B | **Homework 11** |
| 35 | 25/4 | Determinants | §9C | |
| 36 | 25/4 | Determinants | §9C | |
| | 29/4 | | | **Homework 12** |

- The reference concerns sections of the textbook.
- The first exam will cover the material from Meetings 1-15.
- The second exam will cover the material from Meetings 16-28.

- The final exam is commulative.