

Waiver Examination Topics

CAPP 30271: Mathematics for Computer Science and Data Analysis

Suggested references. Two references are given:

- [ILA5] *Introduction to Linear Algebra, 5th ed.* Gilbert Strang. (2016)
- [LAFE] *Linear Algebra for Everyone.* Gilbert Strang. (2020)

The class will use *LAFE*, which is an updated and revised version of *ILA5*. However, *ILA5* may be more readily available. Relevant sections from both textbooks will be given for each topic below.

Topics. The problems in the waiver examination will be from the following topics. Problems may include hand calculations and writing proofs. Electronic devices will not be necessary and will not be permitted.

1. Vectors and matrices
 - ILA5 1.1–1.3
 - LAFE 1.1–1.4
2. Solving linear systems
 - ILA5 2.1–2.6
 - LAFE 2.1–2.3
3. Vector spaces
 - ILA5 3.1–3.5
 - LAFE 3.1–3.5
4. Projections and least squares
 - ILA5 4.1–4.4
 - LAFE 4.1–4.4
5. Determinants and eigenvalues
 - ILA5 5.1, 6.1–6.2, 6.4–6.5
 - LAFE 5.2, 6.1–6.3
6. Singular value decomposition
 - ILA5 7.2–7.4
 - LAFE 7.1, 7.3