Proof-Based Math Readings
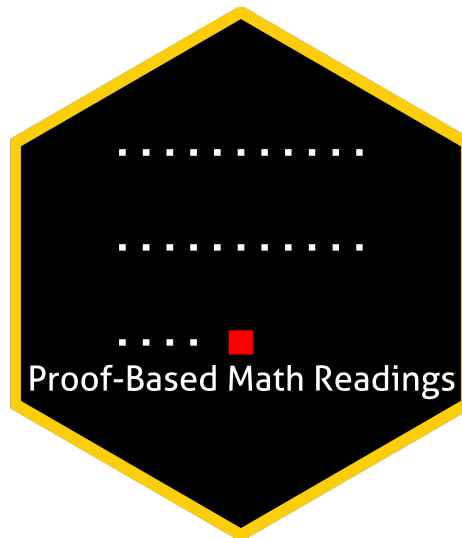# Session: Numerical Linear Algebra
2025 Summer

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Click here for the most recent versions of the syllabuses

Version: 04 January 2025, 09:37 AM

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Proof-Based Math Readings

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0   Motivation

- *Proof-Based Math Readings* is a free, independent online reading group where we study the mathematics required for economics master's and PhD programs through an intuitive approach. Active since May 2023.
- This session of the reading group is on *Numerical Linear Algebra.*

1   Prerequisites

- Proof Techniques resources below.
- Please use the 🔗 Application Form to join our reading group; you will receive a response within a week.

2   Format

- This session takes 12 weeks. We do not have face-to-face/online meetings due to the size of the group.
- Members read the main book and discuss the topics/exercises in the Proof-Based Math Readings Discord 🎮.

3   Resources

3.1   Main Book

Numerical Linear Algebra - Lloyd N. Trefethen, David Bau III (1997 or 2022) is our main book because it is well-written and well-structured.

- 📖 Numerical Linear Algebra - Lloyd N. Trefethen, David Bau III (1997 or 2022)

- 📖 Numerical Linear Algebra - Lloyd N. Trefethen, David Bau III (1997 or 2022, Errata)

- 📖 Numerical Linear Algebra - Lloyd N. Trefethen, David Bau III (1997 or 2022, Solutions by Youngdo Lee)

3.2   Supplementary

3.2.1   Proof Techniques

- 📖 Book of Proof - Richard Hammack (3.3 Edition, 2022)

- ▶ Book of Proof - Richard Hammack (3.3 Edition, 2022, Playlist by Jeremy Teitelbaum)

- ▶ Book of Proof - Richard Hammack (3.3 Edition, 2022, Playlist by Michael Penn)

4   Reading Schedule

- **NLA** is the abrevviation of **Numerical Linear Algebra - Lloyd N. Trefethen, David Bau III (1997 or 2022)**.

📘 **NLA**	**Week 01-02** 📅
Part I: Fundamentals	

📘 **NLA**	**Week 03-04** 📅
Part II: QR Factorization and Least Squares	

📘 **NLA**	**Week 05-06** 📅
Part III: Conditioning and Stability	

📘 **NLA**	**Week 07-08** 📅
Part IV: Systems of Equations	

📘 **NLA**	**Week 09-10** 📅
Part V: Eigenvalues	

📘 **NLA**	**Week 11-12** 📅
Part VI: Iterative Methods	

5   Further Readings (Optional)

📘 Matrix Computations - Gene H. Golub, Charles F. Van Loan (4th Edition, 2013)
📘 Matrix Computations - Gene H. Golub, Charles F. Van Loan (4th Edition, 2013, Errata and M-files)