

# Proof-Based Math Readings

## Session: Measure Theoretic Probability\*

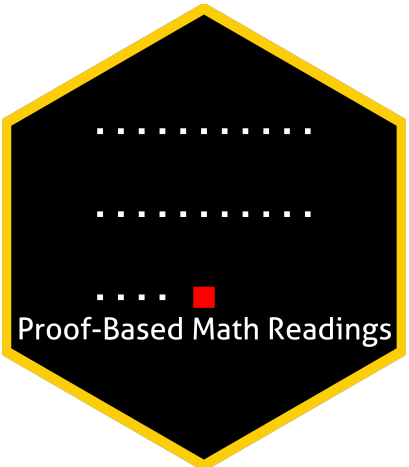
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\*[zekiakyol.com](http://zekiakyol.com)

## 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 *Measure Theoretic Probability*.

## 1 Prerequisites and Format

- Proof Techniques and Real Analysis resources below.
- Please use the [🔗 Application Form](#) to join our reading group; you will receive a response within a week.
- 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 .

## 2 Resources

### 2.1 Main Book and Main Book's Playlist

**A First Look at Rigorous Probability Theory - Jeffrey S. Rosenthal (2nd Edition, 2006 or 2025)** is our main book for this session because it is well-written and well-structured.

Jem Corcoran's playlist is our main playlist because her narrative is great.

- 📖 A First Look at Rigorous Probability Theory - Jeffrey S. Rosenthal (2nd Edition, 2006 or 2025)
- 📖 A First Look at Rigorous Probability Theory - Jeffrey S. Rosenthal (2nd Edition, 2006 or 2025, Errata)
- 📖 A First Look at Rigorous Probability Theory - Jeffrey S. Rosenthal (2nd Edition, 2006 or 2025, Solutions)
- ▶ A First Look at Rigorous Probability Theory - Jeffrey S. Rosenthal (2nd Edition, 2006 or 2025, Playlist by J. Corcoran)

### 2.2 Supplementary

#### 2.2.1 Measure Theoretic Probability

- 📖 Probability: Theory and Examples - Rick Durrett (5th Edition, 2019)
- 📖 Probability: Theory and Examples - Rick Durrett (5th Edition, 2019, Solutions by Hoil Lee, Wonjun Seo)
- ▶ Probability: Theory and Examples - Rick Durrett (5th Edition, 2019, Solutions by Luke Andrejek)
- ▶ Measure Theoretic Probability I - Supriyo Bhar (2021)
- ▶ Probability Foundations - Krishna Jagannathan (2020)

#### 2.2.2 Proof Techniques













- 📖 Book of Proof - Richard Hammack (3.4 Edition, 2025)
- ▶ Book of Proof - Richard Hammack (3.4 Edition, 2025, Playlist by Jeremy Teitelbaum)
- ▶ Book of Proof - Richard Hammack (3.4 Edition, 2025, Playlist by Michael Penn)

#### 2.2.3 Real Analysis

- 📖 Basic Analysis I: Introduction to Real Analysis - Jiri Lebl (Version 6.2, 2025)
- ▶ Basic Analysis I: Introduction to Real Analysis - Jiri Lebl (Version 6.2, 2025, Playlist by Casey Rodriguez)
- ▶ Introduction To Metric Spaces - Paige Bright (2023)

### 3 Reading Schedule

RPT is the abbreviation of **A First Look at Rigorous Probability Theory - Jeffrey S. Rosenthal (2nd Edition, 2006 or 2020)**.

 <b>RPT</b>	<b>Week 01-02</b> 
Appendix A: Mathematical Background Chapter 1: The need for measure theory Chapter 2: Probability triples	
 <b>RPT</b>	<b>Week 03-04</b> 
Chapter 3: Further probabilistic foundations Chapter 4: Expected values	
 <b>RPT</b>	<b>Week 05-06</b> 
Chapter 5: Inequality and convergence Chapter 6: Distributions of random variables	
 <b>RPT</b>	<b>Week 07-08</b> 
Chapter 9: More probability theorems Chapter 10: Weak convergence	
 <b>RPT</b>	<b>Week 09-10</b> 
Chapter 11: Characteristic functions	
 <b>RPT</b>	<b>Week 11-12</b> 
Chapter 12: Decomposition of probability laws Chapter 13: Conditional probability and expectation	

### 4 Further Readings (Optional)

Our Measure Theory syllabus at [github.com/zekiakyol/proof-based-math-readings](https://github.com/zekiakyol/proof-based-math-readings)