

# Proof-Based Math Readings

## Session: Measure Theoretic Probability

### 2024 Fall

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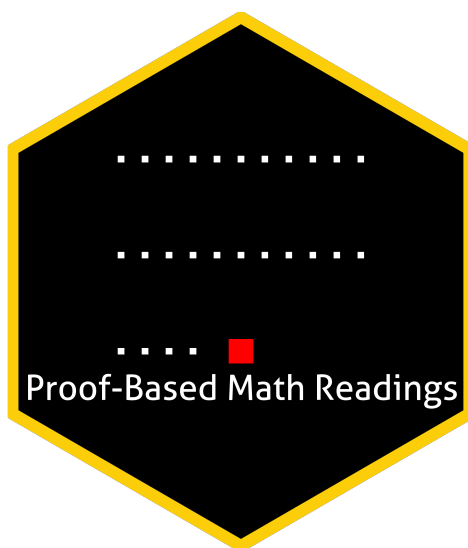
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[Click here for the most recent versions of the syllabuses](#)

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## Table of contents

<b>0 Motivation</b>	<b>2</b>
<b>1 Prerequisites</b>	<b>2</b>
<b>2 Format</b>	<b>2</b>
<b>3 Resources</b>	<b>2</b>
3.1 Main Book and Main Book's Playlist . . . . .	2
3.2 Supplementary . . . . .	2
3.2.1 Proof . . . . .	2
3.2.2 Real Analysis . . . . .	2
3.2.3 Measure Theoretic Probability . . . . .	2
<b>4 Reading Schedule</b>	<b>3</b>
<b>5 Further Readings (Optional)</b>	<b>3</b>




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## 0 Motivation

- *Proof-Based Math Readings* is a free and independent online reading group where we study mathematics required in economics master's/PhD programs using an intuitive approach.
- This session of the reading group is on *Measure Theoretic Probability*.

## 1 Prerequisites

- CGPA: 3.00/4.00.
- Proof and Real Analysis resources below are the prerequisites for this session.
- Please use the  [Application Form](#) to join our reading group.
- Applicants are informed about their application results within a week via email.

## 2 Format





- This session takes 12 weeks.
- We discuss the topics/exercises that we struggle with at  [Proof-Based Math Readings \[Discord\]](#).
- We do not have face-to-face/online meetings due to the size of the group.
- Members are expected to read the chapters, and watch the chapter videos from the book's playlist.

## 3 Resources

### 3.1 Main Book and Main Book's Playlist

**A First Look at Rigorous Probability Theory - Jeffrey S. Rosenthal (2nd Edition, 2006)** 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 just great.

-  [A First Look at Rigorous Probability Theory - Jeffrey S. Rosenthal \(2nd Edition, 2006\)](#)
-  [A First Look at Rigorous Probability Theory - Jeffrey S. Rosenthal \(2nd Edition, 2006, Errata\)](#)
-  [A First Look at Rigorous Probability Theory - Jeffrey S. Rosenthal \(2nd Edition, 2006, Solutions\)](#)
-  [Measure Theoretic Probability - Jem Corcoran \(Playlist, 2024\)](#)

### 3.2 Supplementary






#### 3.2.1 Proof

-  [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 \(3.3 Edition, 2022, Playlist by Michael Penn\)](#)

#### 3.2.2 Real Analysis













-  [Basic Analysis I: Introduction to Real Analysis - Jiri Lebl \(Version 6.0, 2023\)](#)
-  [Basic Analysis I: Introduction to Real Analysis - Jiri Lebl \(Version 6.0, 2023, Playlist by Casey Rodriguez\)](#)
-  [Introduction To Metric Spaces - Paige Bright \(2023\)](#)

#### 3.2.3 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 \(2020\)](#)

## 4 Reading Schedule

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

 <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	

## 5 Further Readings (Optional)

You can check out our Measure Theory syllabus at  [github.com/zekiakyol/proof-based-math-readings](https://github.com/zekiakyol/proof-based-math-readings)