

Proof-Based Math Readings

Session: Bayesian Statistics

2024 Winter

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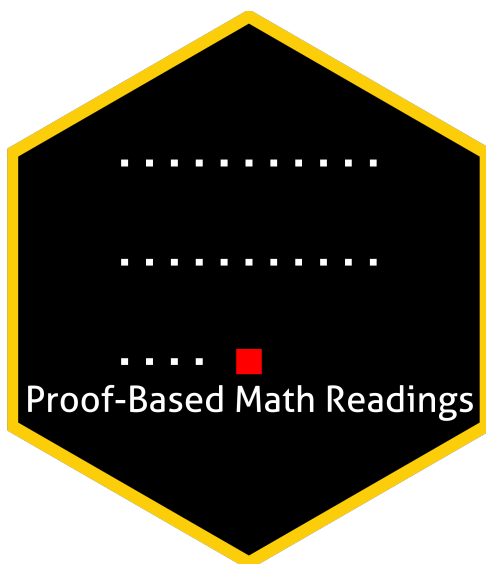
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Table of contents


0 Motivation	2
1 Prerequisites	2
2 Format	2
3 Resources	2
3.1 Main Book and Main Book's Playlist	2
3.2 Supplementary	2
3.2.1 Bayesian Statistics	2
3.2.2 Proof	2
3.2.3 Statistics	2
4 Reading Schedule	3
5 Further Readings (Optional)	3




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 *Bayesian Statistics*.

1 Prerequisites

- CGPA: 3.00/4.00.
- Proof and Statistics 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

Bayesian Econometrics - Gary Koop (2003) is our main book for this session because it is well-written and well-structured. Gary Koop's playlist is our main playlist because his narrative is just great.

-  [Bayesian Econometrics - Gary Koop \(2003\)](#)
-  [Bayesian Econometrics - Gary Koop \(2003, Errata\)](#)
-  [Bayesian Econometrics - Gary Koop \(2003, Playlist\)](#)

3.2 Supplementary



3.2.1 Bayesian Statistics

-  [Bayes Rules! - Alicia A. Johnson, Miles Q. Ott, Mine Dogucu \(2021\)](#)
-  [Bayesian Statistics: A Comprehensive Course - Ben Lambert \(2014\)](#)
-  [A Student's Guide to Bayesian Statistics - Ben Lambert \(2020\)](#)
-  [Bayesian Data Analysis - A. Gelman, J. Carlin, H. Stern, D. Dunson, A. Vehtari, D. Rubin \(3rd Ed., 2022\)](#)
-  [Bayesian Data Analysis - A. Gelman, J. Carlin, H. Stern, D. Dunson, A. Vehtari, D. Rubin \(3rd Ed., 2022, Playlist\)](#)
-  [Explaining the Gibbs Sampler - George Casella, Edward I. George \(1992\)](#)
-  [Understanding the Metropolis-Hastings Algorithm \(Siddhartha Chib, Edward Greenberg, 1995\)](#)

3.2.2 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 \(3.3 Edition, 2022, Playlist by Michael Penn\)](#)

3.2.3 Statistics

-  [Introduction to Probability - Dimitri P. Bertsekas, John N. Tsitsiklis \(2nd Edition, 2008, Summary Material\)](#)
-  [Introduction to Probability - Dimitri P. Bertsekas, John N. Tsitsiklis \(2nd Edition, 2008, Playlist\)](#)
-  [Introduction to Probability - Dimitri P. Bertsekas, John N. Tsitsiklis \(2nd Edition, 2008, Solutions & Errata\)](#)

4 Reading Schedule

- BE is the abbreviation of **Bayesian Econometrics - Gary Koop (2003)**.

 BE	Week 01 
Appendix A: Introduction to Matrix Algebra Appendix B: Introduction to Probability and Statistics 1: An Overview of Bayesian Econometrics	
 BE	Week 02 
2: The Normal Linear Regression Model with Natural Conjugate Prior and a Single Explanatory Variable	
 BE	Week 03-04 
3: The Normal Linear Regression Model with Natural Conjugate Prior and Many Explanatory Variables	
 BE	Week 05-06 
4: The Normal Linear Regression Model with Other Priors	
 BE	Week 07-08 
5: The Nonlinear Regression Model	
 BE	Week 09-10 
6: The Linear Regression Model with General Error Covariance Matrix	
 BE	Week 11-12 
7: The Linear Regression Model with Panel Data	

5 Further Readings (Optional)

-  Bayesian Econometric Methods - Joshua Chan, Gary Koop, Dale Poirier, Justin Tobias (2nd Edition, 2019)
-  [Bayesian Econometric Methods - Joshua Chan, Gary Koop, Dale Poirier, Justin Tobias \(2nd Edition, 2019, Errata\)](#)