Proof-Based Math Readings Session: Graph Theory

2025 Summer

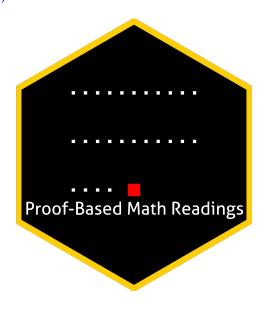
Zeki Akyol*

Department of Economics Istanbul Technical University Click here for the most recent versions of the syllabuses

Version: 16 August 2024, 07:34 PM

Table of contents

0	Motivation
1	Prerequisites
2	Format
3	Resources 3.1 Main Book and Main Book's Playlist
4	Reading Schedule
5	Further Readings (Optional)



^{*}zekiakyol.com

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 *Graph Theory*.

1 Prerequisites

- CGPA: 3.00/4.00.
- Proof 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 Course in Graph Theory - Gary Chartrand, Ping Zhang (2012) is our main book because it is well-structured and well-written.

Mikhail Lavrov's playlist is our playlist because the narrative is great.

- A First Course in Graph Theory Gary Chartrand, Ping Zhang (2012)
- A First Course in Graph Theory Gary Chartrand, Ping Zhang (2012, Playlist by Mikhail Lavrov)
- A First Course in Graph Theory Gary Chartrand, Ping Zhang (2012, Playlist by Wrath of Math)
- A First Course in Graph Theory Gary Chartrand, Ping Zhang (2012, Notes by Evan Chen)

3.2 Supplementary

3.2.1 Graph Theory

- Introduction to Graph Theory: A Computer Science Perspective Reducible (2020)
- Graph Theory Don Sheehy (2020)
- **D**3 Graph Theory (Interactive)
- **Graph Online (Interactive)**

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)

4 Reading Schedule

• FCGT is the abrevviation of A First Course in Graph Theory - Gary Chartrand, Ping Zhang (2012).

FCGT Week 01 Appendix 1: Sets and Logic Appendix 2: Equivalence Relations and Functions Appendix 3: Methods of Proof **FCGT** Week 02 = Chapter 1: Introduction **FCGT** Week 03-04 Chapter 2: Degrees Chapter 3: Isomorphic Graphs **FCGT** Week 05-06 Chapter 4: Trees Chapter 5: Connectivity **FCGT** Week 07-08 **⊞** Chapter 6: Traversability Chapter 7: Digraphs **FCGT** Week 09-10 Chapter 8: Matchings and Factorization Chapter 9: Planarity **FCGT** Week 11-12 Chapter 10: Coloring Graphs

5 Further Readings (Optional)

■ Graphs and Digraphs - Gary Chartrand, Heather Jordon, Vincent Vatter, Ping Zhang (7th Edition, 2024)