Linear Control Systems

Course Description

Hassan Bevrani

Professor, University of Kurdistan

Spring 2024

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Hassan Bevrani
حسن بیورانی

Academic Activities Locations

Iran: Bachelor and Master, Lecturer, Professor (1995-2019)

Japan: PhD, Postdoc, Visiting Professor (2002-2023)

Australia: Senior research fellow, Senior Lecturer (2007-2008)

France: Visiting Professor (2014-2016)

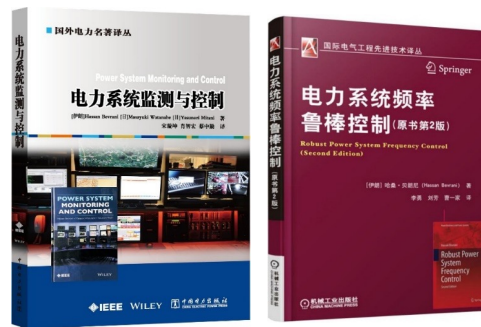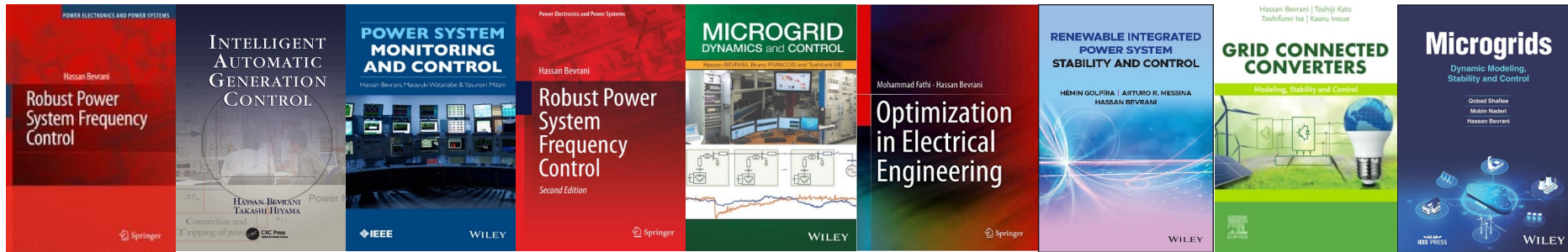**Germany:** Visiting Professor (2017-2018)

Publications

- **450 Papers**

- **15 Book Chapters**

- **9 Books**

Google Scholar Citations

Google Scholar

Hassan Bevrani ✏️

Professor, IEEE Fellow, Dept. of Electrical Eng., SMGRC, Faculty of Eng., University of Kurdistan
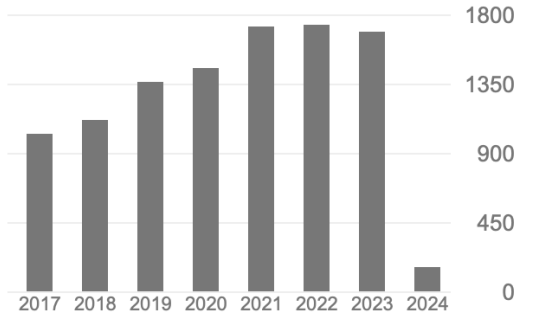Verified email at uok.ac.ir - Homepage

Frequency control   Automatic generation control   Microgrid control   Power system control   AGC

✉️ FOLLOWING

TITLE	CITED BY	YEAR
Robust power system frequency control H Bevrani springer	1730	2014
Virtual synchronous generators: A survey and new perspectives H Bevrani, T Ise, Y Miura International Journal of Electrical Power & Energy Systems 54, 244-254	849	2014
Renewable energy sources and frequency regulation: survey and new perspectives H Bevrani, A Ghosh, G Ledwich IET Renewable Power Generation 4 (5), 438-457	649	2010

Cited by   VIEW ALL

	All	Since 2019
Citations	13541	8143
h-index	48	40
i10-index	138	98

2017 2018 2019 2020 2021 2022 2023 2024

Home Page

https://research.uok.ac.ir/~bevrani

September 24, 2020 — University of Kurdistan — فارسی

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News

- Webinar: Microgrids Concepts and Control
- Webinar: Community Microgrid, where Resilience Meets Economics and Clean Energy
- Webinar: Smart Grids for Smart Cities
- Webinar: Perspectives on 5G and IoT connectivity: Ultra-reliability, massiveness and distributed ledgers

Course Description

This course addresses the linear control theory and techniques for **analysis** and **synthesis** of **control systems**. The course material will include some fundamental concepts on dynamic system **modeling** and control design. Basic methods and tools for **stability** and **performance** analysis of linear dynamic systems will be introduced.

Course Outline

1	An Introduction on Control Systems
2	Laplace Transformation and Mathematical Models
3	Control Systems Characteristics
4	Stability of Linear Feedback Systems
5	The Root Locus Method
6	Frequency Response Methods
7	State-Space Analysis
8	Design of Feedback Controllers

References

[1] H. Bevrani, **Course Lecture Notes**, Spring Semester, 2024.

[2] K. Ogata, **Modern Control Engineering**, 5th Ed., Prentice Hall, 2010.

[3] Norman S. Nise, **Control Systems Engineering**, 7th Ed., Wiley, 2015.
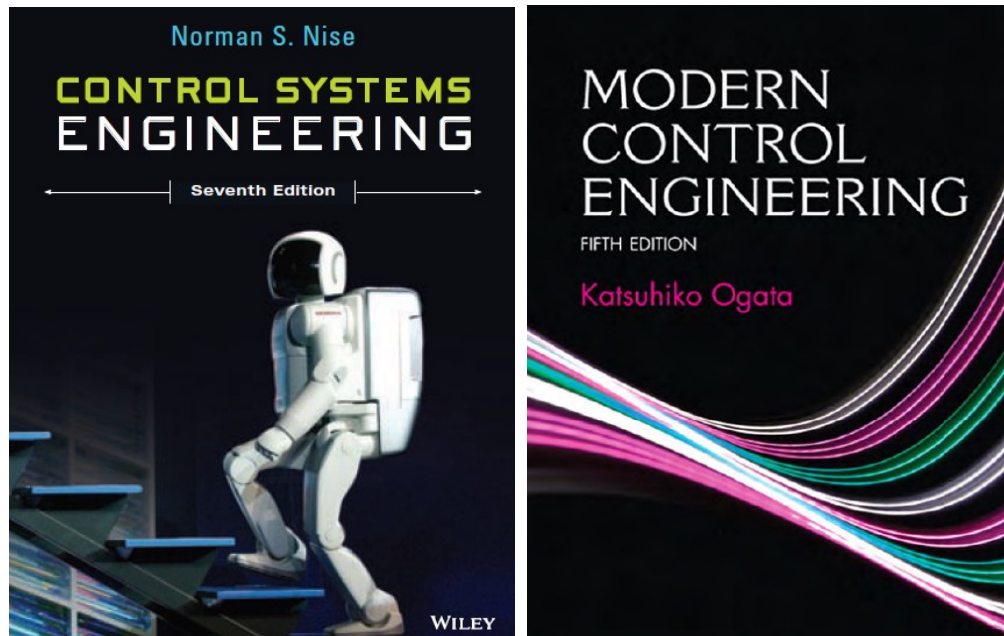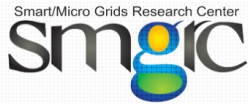
Course Objectives

1. A deep knowledge on the preliminary concepts, frameworks, and components of a Linear Control system,
2. Learning how to find a simple mathematical model for an electrical/mechanical system,
3. Understanding different definitions for stability and performance characteristics,
4. Learning how to analyze a control system using several time and frequency response methods,
5. Design a basic controller for a given system by programing and simulation in MATLAB environment.

Course Grading

Item	(%)	Comment
Attending and Activities	10	Shows your interest/respect
Homework	20	8-12 assignments
Mid-Term Exam 1	20	After Chapter 3
Mid-Term Exam 2	20	After Chapter 6
Final Exam	30	TIR 3rd, 1403

Course Webpage

https://smgrc.uok.ac.ir

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Course Webpage

Smart/Micro Grids Research Center
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Here, enrolled students can access relevant course materials via the provided links.
Explore and enhance your learning experience with the resources available.

Course ID: 7012038-01
Course Name: Linear Control
Academic Year: Spring 2024
Lecturer(s): Dr. Hassan Bevrani

PDF of the Lectures:

Num.	Lecture Name	Download Section
–	–	Click Here
00	L0-Course Description	Click Here
01		Click Here

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Contact e-mail for this Course

o **Please only submit your homework and project reports to the following email address:**

<mark>bevranih18@gmail.com</mark>

o Please use the following term as subject of your email:

Family Name_RAW_HW3   (for HWs)

Family Name_RAW_Project   (for Project)

o For writing a formal email you can use the following link:

https://www.aparat.com/v/8iXW9

Teaching Assistant (TA)

o **The TA for this course will be introduced in the class.**

Thank You!

University of Kurdistan