

# Dynamic Systems Analysis and Design

## Course Overview

Amin Alvanchi, PhD

Construction Engineering and Management



# Dynamic Systems Analysis and Design

2

- **Purpose of the course**
  - To introduce a new management tool and system analysis method to graduate students in construction engineering and management
  
- **Prerequisites:**
  - General engineering knowledge
  - Basic understanding of construction organizations
  
- **Class audiences**
  - Graduate Students in Construction Engineering and Management

# Dynamic Systems Analysis and Design

3

## □ Course outline

#	Topic
1	Introduction to System Dynamics
2	Causal Loop Diagrams
3	Stocks and Flows
4	Dynamic Systems Computer Simulation
5	The Modeling Process
6	Structure and Behavior of Dynamic Systems
7	Dynamics of Stocks and Flows
8	Closing the Loop: Dynamics of Simple Structures
9	The Dynamics of Growth
10	Delays
11	More Tools for Modeling Dynamic Systems
12	Model Testing

# Dynamic Systems Analysis and Design

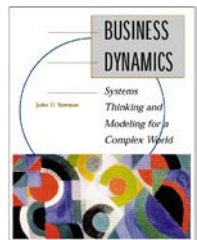
4

## □ **Grade Distribution:**

- Home Assignments: 15%
- Lab/ in Class Exercises: 10%
- Term Project: 15%
- Final Exam: 60%

## □ **Texts and References**

- Sterman J.D. (2000) “Business Dynamics: System Thinking and Modeling for a Complex World” McGraw-Hill Higher Education: NY.





**Thank you!**