

Modeling Dynamic Systems: Lessons for a First Course Second Edition

By Diana M. Fisher

Table of Contents

Teacher Materials

0.	Overview	
0.1	Preface.....	0-1
1.	System Dynamics Curriculum	
1.0	Introduction to System Dynamics Curriculum.....	1- 1
1.1	Descriptions for Patterns of Growth/Decay	1-13
1.2	Writing and Modeling: Using a Notebook to Learn About System Dynamics	1-15
1.3	Newspaper Articles: Search for Dynamic Systems	1-41
2.	The Population Tutorial	
2.0	Introduction to the Population Tutorial	2- 1
2.1	BOTGs and Reference Graphs	2- 7
2.2	A Study of Population Growth.....	2- 9
2.3	A Study of Population Growth II	2-21
3.	Learning Generic Structures	
3.0	Introduction to Generic Processes	3- 1
3.1	Overview of STELLA Components and Operations.....	3- 7
3.2	Generic Processes I: Models Producing Linear Behavior.....	3-11
3.3	Generic Processes II: Exponential Growth Models	3-15
3.4	Generic Processes III: Exponential Decay Models	3-25
3.5	Generic Processes IV: Convergent Models	3-35
3.6	Modeling Dynamic Systems: Review of Generic Structures...	3-41
4.	Easter Island Population	
4.0	Introduction to Easter Island	4-1
4.1	Easter Island Population Model	4-7

5.	Rain Barrel Activities 1 - 4	
5.0	Introduction to Rain Barrel Activities 1-4	5- 1
5.1	Rain Barrel Activities: Intro to Drug Assimilation Model	5- 7
	Rain Barrel Activity 1	5- 7
	Rain Barrel Activity 2	5-10
	Rain Barrel Activity 3	5-12
	Rain Barrel Activity 4	5-16
6.	Drug Assimilation Exercises	
6.0	Introduction to Drug Assimilation Exercises	6-1
6.1	The Drug Assimilation Model	6-3
7.	Epidemics and Transferability of Structure	
7.0	Introduction to Epidemics	7- 1
7.1	NERD Simulation Record Sheet	7-11
7.2	Questions for the NERD Simulation.....	7-13
7.3	The Epidemic Model.....	7-17
7.4	Building Transferable Skills: Models Involving "Infection," "Market Penetration," and "Conversion"	7-25
8.	Urban Dynamics	
8.0	Introduction to Urban Dynamics.....	8- 1
8.1	Design and Use of a Dimensionless Multiplier	8- 7
8.2	Urban Dynamics Model	8-15
9.	Supply and Demand	
9.0	Introduction to Supply and Demand	9- 1
9.1	Material and Information Delays.....	9- 7
9.2	Supply and Demand Model.....	9-25
10.	System Dynamics Stories	
10.0	Introduction to System Dynamics Stories	10- 1
10.1	Modeling Dynamic Systems: System Stories Paper Scoring Guide	10-23
10.2	That Dam Model	10-25
10.3	Lost Lake.....	10-33
10.4	Pronghorn Antelope: An Age-Specific Population Study.....	10-41

11.	Large Modeling Projects	
11.0	Introduction to Modeling Projects	11- 1
11.1	Steps In Modeling Process.....	11- 7
11.2	Project Timeline Guide	11- 9
11.3	Modeling Dynamic Systems: Original Model Scoring Guide...	11-11
11.4	Silver Paper Outline.....	11-13
11.5	Modeling Dynamic Systems: Silver Paper Scoring Guide.....	11-17
12.	Appendix	
12.1	Characteristics of a Good System Dynamics Model.....	12- 1
12.2	The System Dynamics Process.....	12- 3
12.3	Introduction to Generic Structures.....	12- 9
	Beginning Structures for Dynamic Hypothesis	12-11
	Generic Model Structures	12-15
12.4	Rubric for Understanding.....	12-19
12.5	Example Problem for System Dynamics Process.....	12-25
12.6	Special Considerations	12-35
12.7	Systems Thinking and System Dynamics Modeling Resources...	12-37



To place an order or learn more, contact isee systems

Phone: (603) 448-4990
 Toll Free: (800) 987-6758
 Email: support@iseesystems.com
 Web: www.iseesystems.com