System Thinking

COURSE SCHEDULE

- Items below preceded by a star (★) are graded and due at the end of the course (March 7, 2022– Please convert UTC to your local time. No deadline extensions are granted.)
- You will get unlimited access to most of the content after the course ends.
- This is a self-paced course. Please find below the weekly suggested schedule.

Welcome to the Course (40 min)		
Description	**Content/Activity**	**Avg. Time**
This week you'll take a Pre-Assessment to get a baseline of your understanding of the course material. During this period, you'll become familiar with the platform and course design.	Welcome to the Course	
	Introduction	1 min
	Entrance Survey	2 min
	★ Pre-Assessment (2%)	8 min
	Get Started	
	Course Guide	10 min
	Course Team	5 min
	Discussion Forum: Introduce Yourself	5 min
	Office Hours	2 min
	Inspiration Design Toolkit	10 min
	Software Requirements and Accessibility	3 min

Week 1: Foundation of System Thinking (4 hrs 25 min)		
January 31 – February 6		
The first week of the course you will learn the foundations of System Thinking through a diverse set of self-assessment activities, discussions, polls, and learning scenarios. You will apply these concepts to a personal activity system and a professional activity system of your choice.	Introduction	1 min
	1.1 System Thinking	30 min
	1.2 Emergence	40 min
	1.3 Function	25 min
	1.4 Form	25 min
	1.5 Identifying Entities	25 min
	1.6 System Boundaries	35 min
	1.7 Formal Relationships	25 min
	1.8 Formal Relationships	40 min

Week 2: Emergence and System Success (4 hrs)

February 7 – 13

In week two, you will learn about predicting and understanding emergence, and system success and failures. You will synthesize weeks 1 and 2 learning by representing your professional system and reviewing systems from your peers.	Introduction	1 min
	2.1 Predicting Emergence	35 min
	2.2 Understanding Emergence	35 min
	2.3 System's Success and Failures	35 min
	2.4 Using System Thinking	15 min
	★ Week 1 & 2 Graded Activity (30%)	
	★Submit your response	90 min
	★Review the work from three peers	30 min
	Week 2 Polls & Discussion	15 min

Week 3: System Dynamics: Tools for Learning in a Complex World (5 hrs 35 min)

February 14 – 20

In week three, you will learn how to apply system thinking to complex environments. You will apply and reinforce your learning by playing a hardware project management simulation.	Introduction	1 min
	3.1 System Dynamics: Project Management	35 min
	3.2 Project Management	45 min
	3.3 Project Management Simulator: Hardware Project	4 hrs

Week 4: System Dynamics Application: Managing Complex Projects (4 hrs 15 min)

February 21 – 27

This week you will reflect on the simulation experience to identify and learn best practices for managing complex projects as a system thinker. You will apply the lessons learned on system dynamics planning processes and policies' improvements for your company.	Introduction	1 min
	4.1 Project Management Simulator: Debrief	45 min
	4.2 Project Management: Wrap Up	25 min
	★Week 4: Graded Activity (30%)	
	★Submit your response	90 min
	★Review the work of three of your peers	30 min
	Week 4: General Discussion	15 min

Week 5: Supply Chain and Computational Approaches (3 hrs 15 min)

February 28 – March 7

Finally, you will understand the application of system thinking to logistics and transportation systems and computation. You will perform self-assessment, discussions, learning scenarios, and practice activities to reinforce your learning, and to integrate learning from the previous weeks.

Logistics and Transportation Approach to System Thinking	
Introduction	2 min
5.1.1 Form, Function, and Performance	15 min
5.1.2 Counterintuitive Emergent Behavior	15 min
5.1.3 Queuing Systems and Networks	25 min
5.1.4 Modern Logistics and Transportation Systems	5 min
✯ Week 5.1: Graded Self-Reflection (12.5 %)	20 min
Week 5.1: General Discussion	15 min
Computational Approach to System Thinking	
5.2.1 System Thinking: The Computational Approach	10 min
5.2.2 Case Study: The legged Robot	35 min
5.2.3 Computational Design: Wrap up	15 min
✯ Week 5.2: Graded Self-Reflection (12.5%)	15 min
Week 5.2: General Discussion	15 min
5.3.1 Learning Scenario	30 min
5.3.2 Scenario Discussion	15 min
✯ Post-Assessment (13%)	15 min
✯ Exit Survey	10 min

** Download your MIT xPRO professional certificate from xpro.mit.edu/dashboard 48 hours after the course ends (March 9, 2022)*