

Architecture of Complex Systems

Note: Items preceded by a star (★) are graded with due dates in red below.

WELCOME TO THE COURSE (35 min)

In the first section of the course, 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.

- Entrance Survey (5 min)
- ★ Pre-Assessment (15 min)
Due: Final day of the course
- Welcome (3 min)
- Discussion Forum (5 min)
- Course Webinars (5 min)
- Teamwork (3 min)
- Who's in the Course? (3 min)
- Who's Teaching the Course (4 min)
- Follow Us (1 min)

WEEK 1: SYSTEMS THINKING (4-6 hrs)

In the first week, you'll be introduced to Systems Thinking while focusing on form and relationships among form.

- Key Ideas (4 min)
- Opening Activity (15 min)
- Defining Systems Thinking (15 min)
- Systems and Emergence (20 min)
- Four Tasks of Systems Thinking (30 min)
- Architecture and Form (40 min)
- ★ Graded Activity (15 min)
Due: Final day of the course
- ★ Project (1.5 hrs)
Written submission and self-assessment due Sunday of the first week at 23:30 UTC
- Key Takeaways (2 min)

Live Event This Week

Course Orientation Webinar

Date & Time TBD

More information in Welcome to the Course > Course Webinars section

WEEK 2: FUNCTION AND EMERGENCE (4-6 hrs)

In week two, you will move from form to function. First, you will focus on concepts regarding function. Second, you will be introduced to form and function in system architecture. Finally, you will close the week with documentation of systems, a key component for the success of complex systems.

- Key Ideas (2 min)
- Product System (15 min)
- Function (20 min)
- Analyzing Function (40 min)
- Architecture as Form to Function Mapping (15 min)
- Documentation of Systems (25 min)
- ★ Graded Activity (15 min)
Due: Final day of the course
- ★ Project (2 hrs)
Written submission and self-assessment due Sunday of the second week at 23:30 UTC
- ★ Action Plan (30 min)
Due: Final day of the course
- Key Takeaways (2 min)

WEEK 3: SYSTEM ARCHITECTURE (4-6 hrs)

The third week of the course focuses on system architecture. You will take a further step in the study of relationships, specifically between form and function. You will cover three key ideas (1) concept, (2) architecture and concept, and (3) system architecture decisions.

- Key Ideas (3 min)
- Concept (35 min)
- Architecture and Concept (20 min)
- System Architectural Decisions (35 min)
- ★ Graded Activity (30 min)
Due: Final day of the course
- ★ Project (2.5 hrs)
Written submission and self-assessment due Sunday of the third week at 23:30 UTC
Peer reviews due Monday of the fourth week at 23:30 UTC
- Key Takeaways (2 min)

Live Event This Week

Course Q&A Webinar with Course Faculty

Date & Time TBD

More information in Welcome to the Course > Course Webinars section

WEEK 4: MODELING WITH DSMs and MODULARIZATION (4-6 hrs)

The fourth week of the course will center on the representation of systems using a matrix like-view. Finally, you will cover change management, an important topic when architecting systems.

- Key Ideas (1 min)
- Design Structure Matrix Modeling (10 min)
- Architecting Systems Using DSM (40 min)
- Architecting Process Flow Using DSM (40 min)
- Modularization, Two Down, One Up (30 min)
- Change Management (40 min)
- ★ Project (1.5 hrs)
Written submission and self-assessment due Sunday of the fourth week at 23:30 UTC
Peer reviews due Monday of the fifth week at 23:30 UTC
- ★ Action Plan (20 min)
Due: Final day of the course
- Key Takeaways (2 min)

Top 10 Questions

Key Ideas Section

Questions due by 21:00 UTC on Friday

Responses posted by 21:00 UTC on Monday

WEEK 5: SYSTEM ARCHITECT (4-6 hrs)

The fifth and final week of this course takes a step back from the architect's point of view. You will view the role of the architect in the development of a system, his or her deliverables, and three main architecture frameworks used in the industry.

- Key Ideas (3 min)
- Role of the Architect (40 min)
- Deliverables of the Architect (1.5 hrs)
- Architecture Frameworks (35 min)
- ★ Graded Activity (15 min)
Due: Final day of the course
- ★ Project (2 hrs)
Written submission and self-assessment due Sunday of the fifth week at 23:30 UTC
Peer reviews due on the final day of the course at 23:30 UTC
- Key Takeaways (2 min)
- Course Wrap Up (3 min)
- Exit Survey (10 min)
- ★ Post-Assessment (15 min)
Due: Final day of the course

AFTER THE COURSE ENDS

Day the Course Ends at 23:30 UTC

- Graded assignments no longer accepted
- Discussion Forums lock
- Course staff will no longer monitor or update course content

Friday after the Course Ends

- Course certificates available on MIT xPRO dashboard