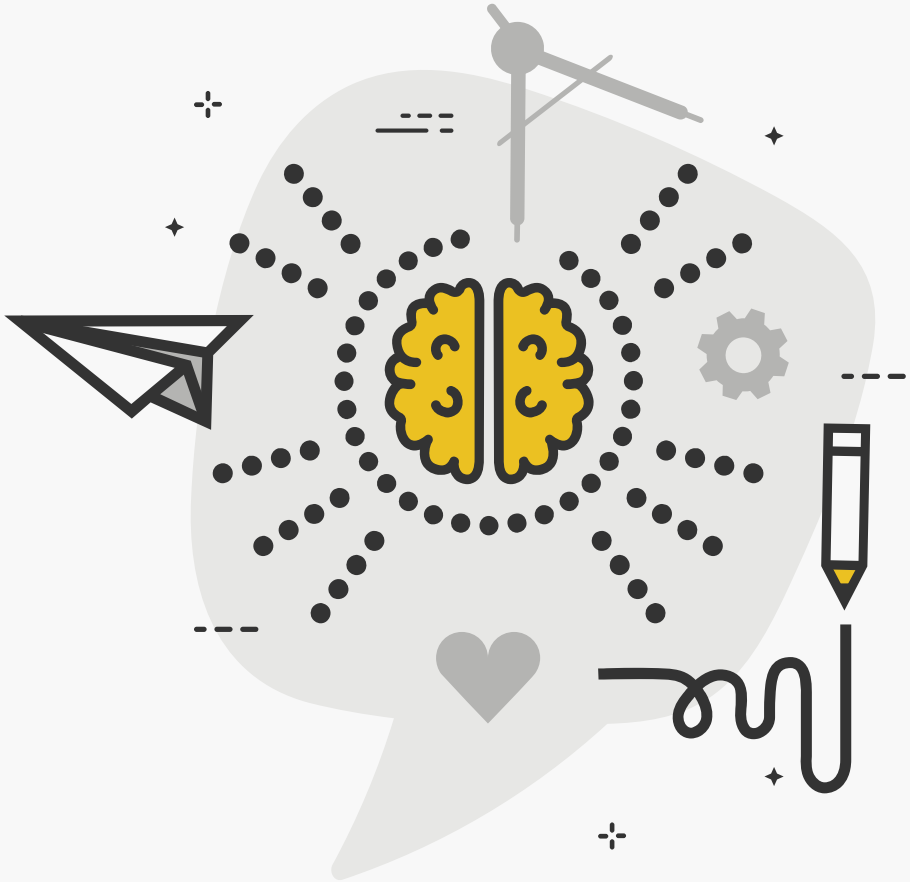
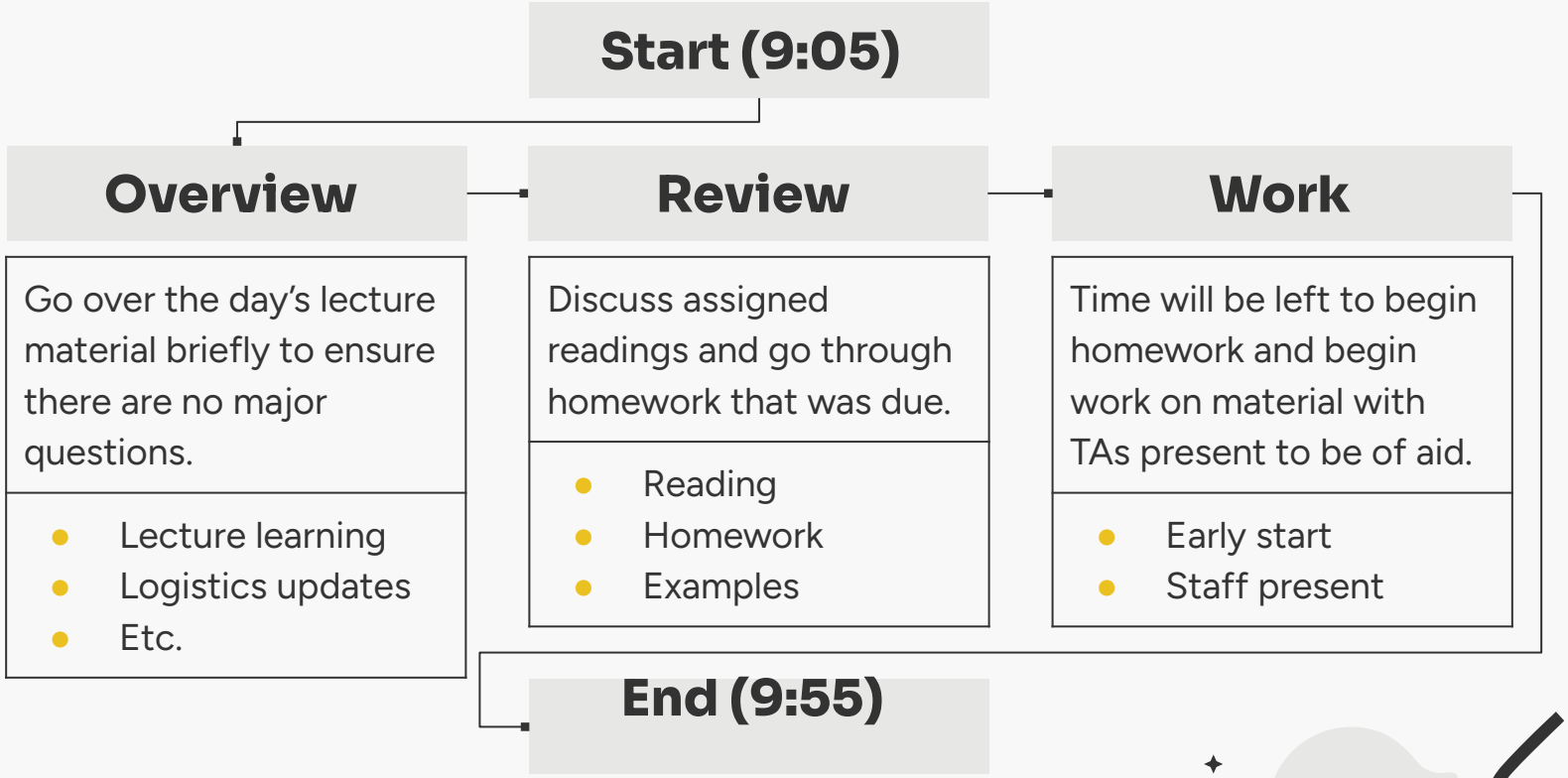
Recitation

Week 2



Attendance

Rough Layout of Recitations



Homework

Assigned via Canvas weekly and to be turned in 12 pm the following Monday.

Additional readings to expand on learning material available and encouraged.

Looking Ahead – Part B Project

In the second half of the class, you will work in teams to design, prototype, and test a user-interaction based system that addresses a **real problem faced by MIT students.**

Your system may take the form of:

- A **voice/chatbot agent** (e.g., dining assistant, study buddy).
- A **software application** (e.g., scheduling tool, academic productivity tracker).
- A **hardware/hybrid system** (e.g., Raspberry Pi dorm utility, smart desk device).

The emphasis is on **design thinking and innovation**, not tool mastery. Challenge your mental model when designing a user interfacing system. Teams should apply the **12-step innovation framework**, build **two iterative prototypes**, and conduct **two rounds of usability testing** with target users (MIT peers).

Material Review

2. Needs and Assumptions Analysis

Identify and Understand the Needs

Identify and Question the Assumptions

Needs Analysis – Important Questions

User

What are the needs of the customer/user?

Designer

What are the needs of our team?

Deliverable: 5 one-sentence bullets describing needs of both groups

Assumptions Analysis

Innovation Assumption: An assumption about a product or within an industry that hasn't changed in a long time likely due to popularity/conformity.

Deliverable: 3 one-sentence bullets describing any assumptions (big or small)

3. Research & Discovery

Qualities

Options

	Price	Look	Colors/Style	Target Buyer / Buyer feelings
Reach Essentials	$3.69 for 6		Silver handle with green/blue/purple/ silver/rose head	35-55 years old. “Comfortable” “Good price”
Quip Electric Toothbrush 2022	$29.99		5 options (gold, copper, dark aqua, silver, slate)	25-32 years old. “Cool” “Modern” “My friends have them also”

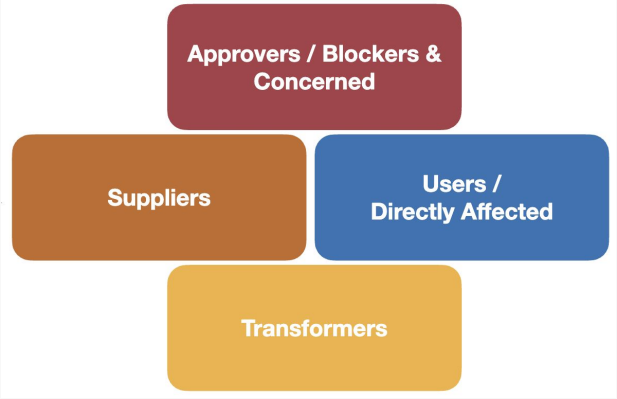
Deliverable: Table with 3-4 options and 4-5 qualities with a short description for each box

Additional Research Methods:

- Ethnographic
- Surveys/interviews/feedback analysis
- Expert analysis
- Architecture analysis
- Patent/literature review
- Meta Analysis
- Eye tracking/electroencephalography (EEG)

4. Stakeholder Analysis

Stakeholder Definition: A person or group that benefits: has an investment, share, or interest in something



Stakeholder	Type	Why We Care About Them	Not Prioritized	Low	Med	High	What They Care About/ How To Satisfy

Deliverable: Table with minimum of one example of each stakeholder type

5. Boundary and Hazard Mitigation

Boundary

What you are limited by

Hazard

What could go wrong

Boundary/Hazard	Likelihood (0-10)	Severity (0-10)	Expected Impact (= Likelihood x Severity)

Deliverable: Table with minimum of two hazards and two boundaries

A Police Robot For The City Of Cambridge

Boundary/Hazard	Likelihood (0-10)	Severity (0-10)	Expected Impact (=liklihood x severity)	Mitigation Strategy	Cost-Effectiveness

Consider

- Resources
- Creation, Delivery, Execution
- Operation/Use
- Externalities

Reading Discussion

Question 1

How would you differentiate a brilliant solution to the wrong problem from a good design, and why might the former actually be harmful?

Question 2

In the first reading, “The design of everyday things,” Norman talked about both market research and design research as important to the innovation process. What is the difference between them and why are both needed?

Question 3

In the second reading, Rittel and Webber, describe “wicked problems” as fundamentally distinct from “tame problems.” What are those key differences?

How would you use steps discussed today in class to approach these “wicked problems?”

Homework

D-TILE Techniques Part I: Exploring Needs & Direction

- Needs & Assumptions
- Morphological Analysis
- Stakeholder Analysis
- Boundary & Hazard Analysis

Questions?

Contact D-TILE Staff @ Any Time
dtile@mit.edu

MUD Cards