

ISDN 1001 – Introduction to Integrative Systems and Design

Fall 2023

Tuesday 3:00 pm to 4:50 pm & Friday 9:00 am to 11:50 am, Room 6581, 3 Credits

Course Description

This is a foundation course in which students will learn about the societal, economical, and cultural impact of integrative systems and the importance of integrating design into the creation of integrative systems. Through lectures, discussions, case-study and presentation, hands-on dis-assembly and re-assembly exercises, students will learn about the basic design principles, design terminology, design skill-sets, design thinking and process, and how a good design relates to the design principles. Students will also learn about what is an integrative system and the importance of using technology to build an integrative system and how it is decomposed into different sub-systems that involve multiple technology components, interacting with each other.

Course Objectives

This is the foundation and introductory course for all ISDN students, while it is also an Engineering Introductory Course for all Engineering students. It is the first ISDN course students will take in HKUST. As most of the incoming high school students do not have background on design and also the knowledge of integrative systems, this course serves to let students understand the impact of integrative systems and the importance of design in creating these systems. It provides the necessary foundation to prepare students to move forward in acquiring more in-depth knowledge on design and building integrative systems. Also, it introduces the relevance of the future courses that the students will take in their later study. It gives a first taste of the unique project-based experiential learning pedagogy.

Intended Learning Outcomes (ILO)

ILO No.	Description
1	Identify the impact of design and integrative systems in social, economic and cultural context
2	Appreciate the values of integrative systems and design
3	Connect different disciplines in integrative systems and design
4	Recognize the value of and identify the interaction among different building blocks of systems
5	Develop the ability to work within constraints (e.g. technology boundary) and prioritize the needs
6	Integrate knowledge from integrative systems

Course Instructors

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Course Coordinators

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Grading

Task Items	Type of Submission	% of final grade	ILO#
In-class Participation and Overall Performance*	---	15%	1-6
Phase 1: Observation trip presentation	Team	10%	1, 2, 4
Phase 2: Disassembly and re-assembly highlights	Team	10%	3, 4, 6
Phase 3: Mini-project deliverables	Team	20%	1-6
Learning portfolio (Design diary, Technical independent study, Mini-Project personal portfolio, ISDN1001 learning journey)*	Individual	30%	1-6
Peer evaluation	Individual	5%	2, 3, 6

Important Note:

* At the end of each phase, drafts for submitting portions of the **learning portfolio** (e.g., design diary, technical independent study) will be set during the semester. Provisional assessment will be provided by instructors together with **in-class performance**. Final grade of learning portfolio (30%) will be determined according to the final submission.

Assignment Submissions

Students are required to individually submit all course assignments onto Canvas to the designated assignment folders. Assignments that are meant to be completed independently will be graded individually while team assignments will receive a team grade. However, students will not receive a grade for any assignment they do not submit.

Late Submissions

20% of the total marks will be deducted from an assignment for each day that it is late (weekends are also counted). Assignments submitted more than 5 days after the due date will receive a zero grade.

Attendance

Students need to contact Course Instructors or Course Coordinators in advance to make alternative arrangements if they cannot complete/attend any assessments.

Team Assessments

Individuals who have not received permission to be excused and are not present will receive a zero grade (except in cases of emergencies and documented illnesses). The whole team will lose out on any grades associated with a missing students' participation or contributions.

Recommended Reading

Kelley, T., & Kelley, D. (2013). *Creative confidence: Unleashing the creative potential within us all*. Currency.

Good Design Award Results. <https://www.g-mark.org/en/learn/past-awards/gda-2022/results>

The James Dyson Award. Website: <https://www.jamesdysonaward.org/en-hk/>

Red Dot Design Award: <https://www.red-dot.org/>

Core 77 Design Award: <https://designawards.core77.com/>

The World of Kenji Ekuan and GK Design Group: Soaring High in the Sky. Website: <https://www.gk-design.co.jp/en/works/1182/>

Arnheim, R. (1997). *Visual thinking*. Univ of California Press.

Class Schedule

Wk	Date	Day	Time	Topic	Remark
1	1/9	Fri	09:00 – 11:50	Course outline: Why learning integrative systems and design	Assignment: Bug list
	5/9	Tue	15:00 – 16:50	Good & Bad designs	By Prof. CY Tsui
	8/9	Fri	09:00 – 11:50	Creativity	1 st Team Formation Announcement: Field trip, Design Diary
2	12/9	Tue	15:00 – 16:50	Design Thinking and process	By Dr. Jac Leung Former ISD student sharing
	15/9	Fri	09:00 – 11:50	Design and social innovation	
3	19/9	Tue	15:00 – 16:50	<u>Phase 1: Understand design through observations</u>	Invited Speaker: Prof. Changying Xiang
				Design Styles & Terminologies	
	22/9	Fri	09:00 – 11:50	Planning for field trip	Field trip: 23 Sep (Sat). Time: TBC
4	26/9	Tue	15:00 – 16:50	Storytelling	Invited Speaker: Mr. Brian Lau
	29/9	Fri	09:00 – 11:50	Storyboarding & Visual Communication	
5	3/10	Tue	15:00 – 16:50	Interaction design	Invited Speaker: Prof. Tristan Braud
	6/10	Fri	09:00 – 11:50	Individual consultation	
6	10/10	Tue	15:00 – 16:50	Business & Entrepreneurship	Invited Speaker: TBC
	13/10	Fri	09:00 – 11:50	Findings from field trip	Team presentation Design diary draft
7	17/10	Tue	15:00 – 16:50	<u>Phase 2: Understand systems through disassembling and reconstructing</u>	2 nd Team Formation Invited Speaker: Prof. Winnie Leung
				Systems & Functions	
	20/10	Fri	09:00 – 11:50	Dis-assembly and re-assembly	(Part 1: Black box)
8	24/10	Tue	15:00 – 16:50	Dis-assembly and re-assembly	(Part 2: Dis-assemble)
	27/10	Fri	09:00 – 11:50	Dis-assembly and re-assembly	(Part 3: Reassemble)
9	31/10	Tue	15:00 – 16:50	Evolution of Technologies	By Prof. CY Tsui
	3/11	Fri	09:00 – 11:50	<u>Phase 3: Synthesize through self-defined project</u> Project Brief	Generating top 10 problem statements
10	7/11	Tue	15:00 – 16:50	Tutorial - Project management tools (e.g., Notion, Miro)	
	10/11	Fri	09:00 – 11:50	Identifying a problem	Writing a HMW statement
11	14/11	Tue	15:00 – 16:50	Ideating and prototyping System breakdown for independent study	
	17/11	Fri	09:00 – 11:50	Prototyping and testing	ISD Ninja's time
12	21/11	Tue	15:00 – 16:50	Prototyping and testing	
	24/11	Fri	09:00 – 11:50		
13	28/11	Tue	15:00 – 16:50	Reflection + Focus group	Final presentation

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